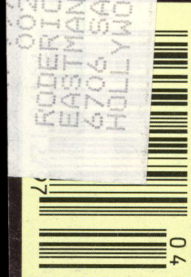


American Cinematographer



0020732-000MEMBER-999
KODERICK RYAN
EASTMAN KODAK
6706 SANTA MONICA
HOLLYWOOD CA 90038-



Inside: Photographing *The Killing Fields*
Cinematography Oscar Nominees

You Capture The Look . . .



Let Us Take Care Of The Rest

At CINE PRO we're here to service you with Arriflex and selected Panavision cameras, complete Lighting & Grip packages including HMI's, 5 Ton Grip trucks, Generators and a full line of Expendables. We will meet your individual needs with service and quality. Stop in or give us a call and let us plan your next package.

After all your look reflects ours.

CINE=PRO

For more information contact:

CINE PRODUCTION EQUIPMENT, INC.

940 N. Orange Drive, Hollywood, CA 90038 • (213) 464-3800 • Telex 696414-01

There's a new video game in town, and it couldn't be easier to play. Select a production of any size or complexity, prepare an equipment list and give us a call.

We've always made a special effort to be where the action is, and electronic media is no exception. Our production track record, full-service capability, and state-of-the-art hardware set the standard for convenience and value.

And, if that's not enough, we invite you to experience the future of electronic cinematography: the incredible, new *Panacam*

from Panavision®.

We know that when you want the best, good won't do. **GET THE GENERAL IDEA.**

*Distributors for Panavision Cameras and Lenses;
Chapman Dollies and Cranes.*

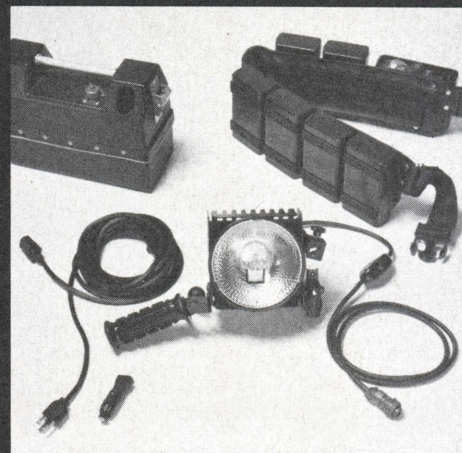
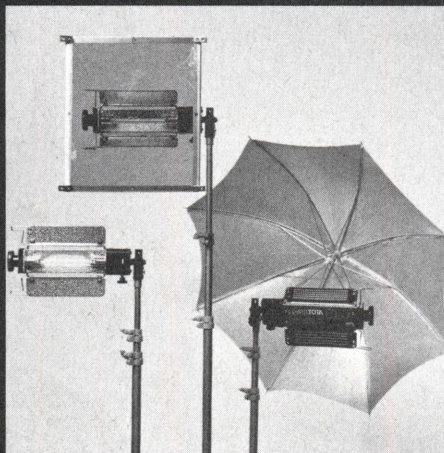
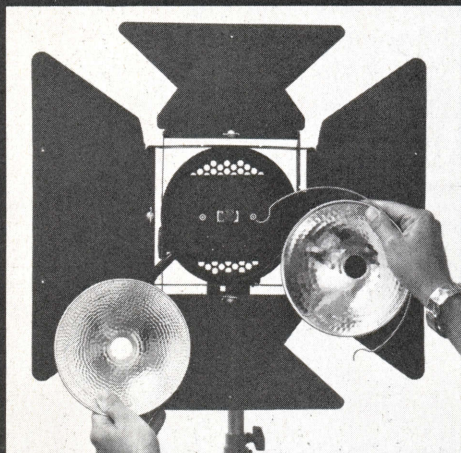
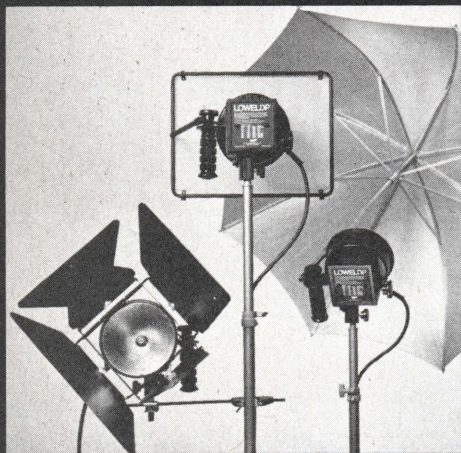
540 W. 36 St., NYC, 10018, (212) 594-8700, Telex 14-7136

GENERAL[®] **CAMERA**

If you like us in film, you'll love GENERAL CAMERA VIDEO.



CHANGING LIGHT STYLES



Your lighting needs may vary from one job to another, or even in the middle of a set-up. To prevent mid-light crisis, some of our units operate interchangeably as hard, semi-soft or extremely soft sources. Or as high intensity instruments. Each light has an array of control and mounting accessories, plus a choice of different wattage lamps.

The Omni-light alone, could satisfy your current needs: 12 and 30 volt battery as well as 120 and 240 volt operation. Our patented reflectors insure broad, even illumination with remarkably efficient light output. Lowel's focusing units have unprecedented spot-flood ranges: 7-1 for the DP, up to 10-1 for the Omni. And the most foldable, affordable, barndoorable Softlight, changes dull subjects into radiant ones, in nothing flat.

Lowel—for a quick change of light-style. Send for our catalog and free newsletter. Lowel-Light Mfg., Inc. 475 Tenth Ave. New York, N.Y. 10018. 212-947-0950. Lowel West—3407 West Olive Ave. Burbank, California 91505. 213-846-7740.

lowel®

Features

- 34 Wings: Epic of the Air**
The first film to win the Best Picture Oscar
- 43 Photographing Robert Kennedy and His Times**
Michael D. Margulies, ASC, and a 7 hour mini-series
- 50 Adam Greenberg and The Terminator**
An economical approach to effects

Academy Award Nominees

- 54 Special Visual Effects**
2010, Ghostbusters & Indiana Jones
- 58 Caleb Deschanel, ASC, and The Natural**
Creating visuals for an American myth
- 64 Chris Menges and The Killing Fields**
Capturing the malevolent and macabre beauty of Cambodia
- 79 Vilmos Zsigmond, ASC, and The River**
Storytelling with light, shadow and images
- 85 Ernest Day, BSC, and A Passage to India**
Mystery rather than muddle
- 94 Miroslav Ondricek and Amadeus**
Filming by candlelight
- 103 The Academy Honors Lin Dunn, ASC**
The Gordon E. Sawyer Award
- 104 A Lighting Seminar with Ossie Morris, BSC**
One master's approach



Departments

- 111 Special Effects**
Double Vision Through the Magic of Introvision
- 115 Engineering**
The Scientific and Technical Academy Awards
- 119 Camera**
Single Reel 70mm Stereographics 3-D System
- 121 Camera**
The Design and Operation of Skycam
- 7 Letters**
- 12 New Products**
- 22 The Bookshelf**
- 28 Calendar**
- 135 Classifieds**
- 141 From the Clubhouse**
- 142 In Memoriam**
- 143 Ad Index**
- 144 Personal Favorite**



On Our Cover:
Sam Waterson as Sydr Schanberg in a scene from *The Killing Fields* which was nominated for seven Academy Awards including one for cinematography by Chris Menges.

INTIMIDATE YOUR FRIENDS!



**Be wise, informed, knowledgeable,
aware, alert, and just plain smart!**

SUBSCRIBE NOW TO ...



12 issues \$15.95 (regularly \$20)

24 issues \$29.95 (regularly \$39)

Name (Please print) _____

Address _____ City _____

State (Country) _____ Zip _____

Occupation _____ ☐ My payment is enclosed. ☐ Please bill me.
Foreign subscribers add \$10; Canada & Mexico, \$5 per year. No credit orders
outside U.S.A. Payment must accompany order in U.S. currency only.

American
Cinematographer

Richard Patterson
Editor

George Turner
Associate Editor

Martha Winterhalter
Art Director

Jean Turner
Assistant Editor

Patricia Armacost
Circulation Manager

Barbara Prevedel
Accounting

Angie Gollmann
Advertising Manager

Daniel Rios
Back Issues

Diane Aquino
Office Assistant

George L. George
Book Reviews Editor

Editorial Advisory Committee:

Henry Freulich, *Chairman*
Leonard South, *Co-Chairman*
L.B. Abbott
Howard Anderson, Jr.
Linwood Dunn
George Folsey
Alfred Keller
Milton Krasner
Phil Lathrop
Gene Polito
Lester Shorr
Harry Wolf

American Cinematographer (ISSN 0002-7928)
established 1920 in 66th year of publica-
tion is published monthly in Hollywood by
ASC Holding Corp., 1782 N. Orange Dr.,
Hollywood, California 90028, (213)
876-5080, U.S.A. Subscriptions: U.S. \$20.00;
Canada/Mexico \$25.00; all other foreign
countries \$30.00 a year (remit international
Money Order or other exchange payable in
U.S.). Advertising: rate card on request to
Hollywood Office. Copyright 1985 ASC
Holding Corp. Second-class postage paid at
Los Angeles, California and at additional
mailing offices. **Postmaster:** send address
change to ASC Holding Corp., P.O. Box
2230, Hollywood, CA 90078.



ur print film looks beautiful for so long,
you'd think we cast a spell on it.

There's really no magic to Eastman color print film 5384/7384. It only looks that way because of its ability to hold delicate hues, subtle contrasts, and brilliant colors. Colors that can last for 100 years. Even longer when carefully stored. Next time you order release prints for recreating fantasy, or reality, ask for the print film that brings it all beautifully to life.



Eastman color print film 5384/7384. Ask for it.

WE'RE A PERFECT MIX...

A sophisticated service and supply source with a thorough blend of film and video cameras...backed up with complete support equipment and an experienced staff of technicians.

We have all the hardware to meet your most demanding requirements for total production...and at very competitive prices. Call upon us when you need a perfect mix.

CSC FILM



CSC VIDEO

Some of our cameras:
Moviemax Super, Arriflex 35BL-3 PL,
Arriflex 35-3, Arricam 35-3, BNC-R2A
Lite Weight, Mitchell R-35, Arriflex
16SR, Ikegami Video cameras.

Some of our support:
Production Consoles, 1" Recorders,
Triax Systems, Ronford and Sachtler
Tripods, Mitchell and Worrall Gear
Heads, Lightflex Systems, Cooke
Zoom Lenses, Zeiss and Canon High
Speed Lenses.



FOR TOTAL PRODUCTION

Camera Service Center, Inc.

625 West 54th Street

New York 10019

(212) 757-0906

The Finest Maintained Rental Equipment for Motion Picture and Video Tape Production

Letters

Exhibition Quality

I just received my February issue and would like to applaud your "From the Editor" column on exhibition quality. It is high time that production interests become involved in the decisions which govern the final link in the motion picture chain - exhibition.

For the past two years, the Theater Alignment Program (TAP), administered through Lucasfilm Ltd., has been working with producers, distributors, and exhibitors in an effort to ensure that the filmmaker's work is delivered to the public as it was intended. Essentially, the program is two-pronged: checking quality of 70mm prints prior to release and providing tune-ups to 70mm theaters. Having eliminated, to some degree, defects with the prints, we have found that the most significant element in the degradation of technical presentation comes as a result of exhibitors who, through economic short-sightedness, often do not invest in suitable equipment or comprehensive maintenance.

If producers in a "strong box-office position" begin to demand performance in return for the awarding of bookings, eventually these bookings will be made based on quality presentation rather than long-standing, often political, relationships. And this is good for the economic health of the entire industry because better presentation means better boxoffice.

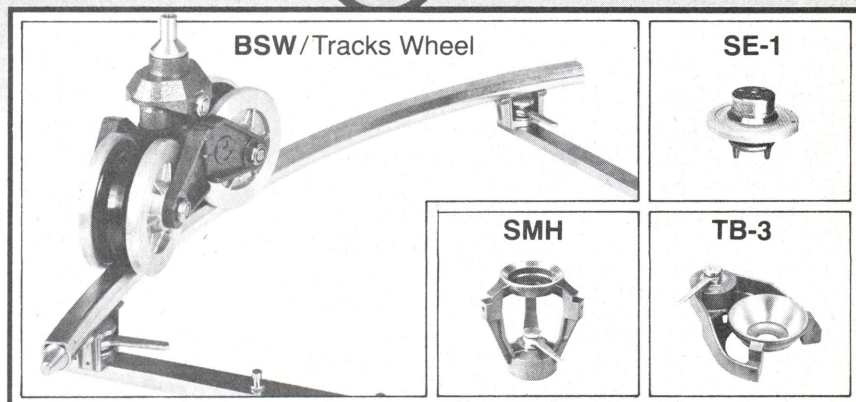
—Brian Berdan
San Rafael, California

Wrong Initials

With reference to Donald Chase's article on *Turk 182*, in the February issue of *American Cinematographer*, as so often happens with interviews of that nature, no matter how concentrated the amount of checking, a number of errors always seems to occur.

e

**ONCE YOU HAVE SAID ELEMACK
YOU HAVE NAMED THE MOST
IN-DEMAND DOLLIES
ALL OVER THE WORLD!**



To receive detailed information **inquire directly to Elemack.**

elemack ITALIA s.r.l.

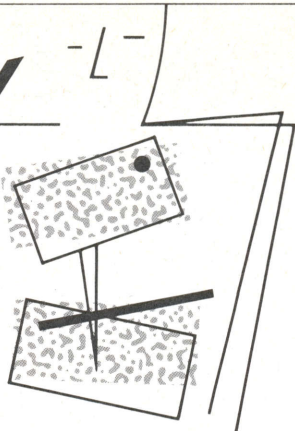
00148 ROMA - VIA POGGIBONSI, 15 - PHONE 5231994-5236163 - CABLE: ELEMACK - ROMA - TELEX 614183

Dave Knox

STEADICAM

212 • 288 • 1603

Purolator Courier • 7-Up • AT&T • Manufacturer's Hanover Trust
Norma Kamali • Body Rock • Count Basie Orchestra • Six Flag's
Autoworld • Consumer's Power • Avon • CBS • NBC • ABC



THIS IS NO TIME TO CHANGE BATTERIES IN YOUR WIRELESS MICROPHONE.



You've been there.

The once-in-a-lifetime shot missed because of a dead battery. The shoot with the half-day setup, botched by dropouts. Critical takes whose reshoots took you over budget. All in all, wireless often did a lot more *to* you than *for* you.

But that was before Sennheiser.

Now, the name you trust most in condenser and dynamic microphones is the one to count on for wireless. With a new family of subminiature body pac UHF and VHF transmitters and receivers.

Like all Sennheisers, they're technologically in a class by themselves. With sophisticated circuitry including a DC-to-DC converter for longer, more consistent performance on standard AAA cells. So

you change batteries less often, while you enjoy cleaner, crisper, dropout-free performance.

But there's a lot more. Sennheisers are the smallest transmitters—and receivers—on the market. They're incredibly easy to use. They combine light weight with outstanding ruggedness (in fact, you can stand on them without breaking them). And that's still only the beginning.

But don't take our word for it. Bring your eyes and ears to a Sennheiser dealer for a demonstration. Or contact us for more information. You owe it to your reputation.



SENNHEISER®

Sennheiser Electronic Corporation (N.Y.)
48 West 38th Street • New York, NY 10018 • (212) 944-9440

Manufacturing Plant: D-3002 Wedemark, West Germany
© 1985, Sennheiser Electronic Corporation (N.Y.)

In this instance, the biggest and most embarrassing was reference to me in the title as "B.S.C." Although I was brought up in the Film Industry in England, I am not a member of the "British Society of Cinematographers." I am, however, a longstanding member of the "Canadian Society of Cinematographers," (C.S.C.).

I should be glad if you would correct this in your next issue.

—Reginald H. Morris
Scarborough, Ont.

Dynavision Correction

In his article on Dynavision, Bob Fisher errs in stating that a CRI is made on 5243 stock. As he spells it out in the article, color reversal intermediate would, in fact, yield a negative image, and its actual stock number is 5249—5243 is an interpositive/internegative stock, and according to the flow Fisher describes, would result in a 35mm interpositive from the original negative from which the 65mm internegative is made.

Dynavision, incidentally, was originally announced by Linwood Dunn, ASC and Don Weed in 1968 as a method of producing high quality low grain front projection plates. In the famous April '74 3-D issue of the *Cinematographer*, Dunn announced its adaption to a single-system over-and-under 3-D process in which Irwin Allen was interested for a 3-D circus film.

—Rick Mitchell
Hollywood, Calif.

400 Feet!

I would like to comment on Nora Lee's article on the Disney film *Baby* in the March '85 issue of AC. It involves the 1954 film *Godzilla*.

I found the statement on the late Eiji Tsuburaya's creation as just "a man in a baggy costume" uncalled for. Did she ever consider that *Godzilla* was supposed to look the way he did? Also, the film was well done—especially *Godzilla's* night time attack on Tokyo, considering the film's budget and the technology available.

A big factual error can be found when it's mentioned that the radioactive monster was 400 feet tall. False. From reliable sources, *Godzilla's* true height was 164.1 feet.

—J. Goto
Orange, Calif.

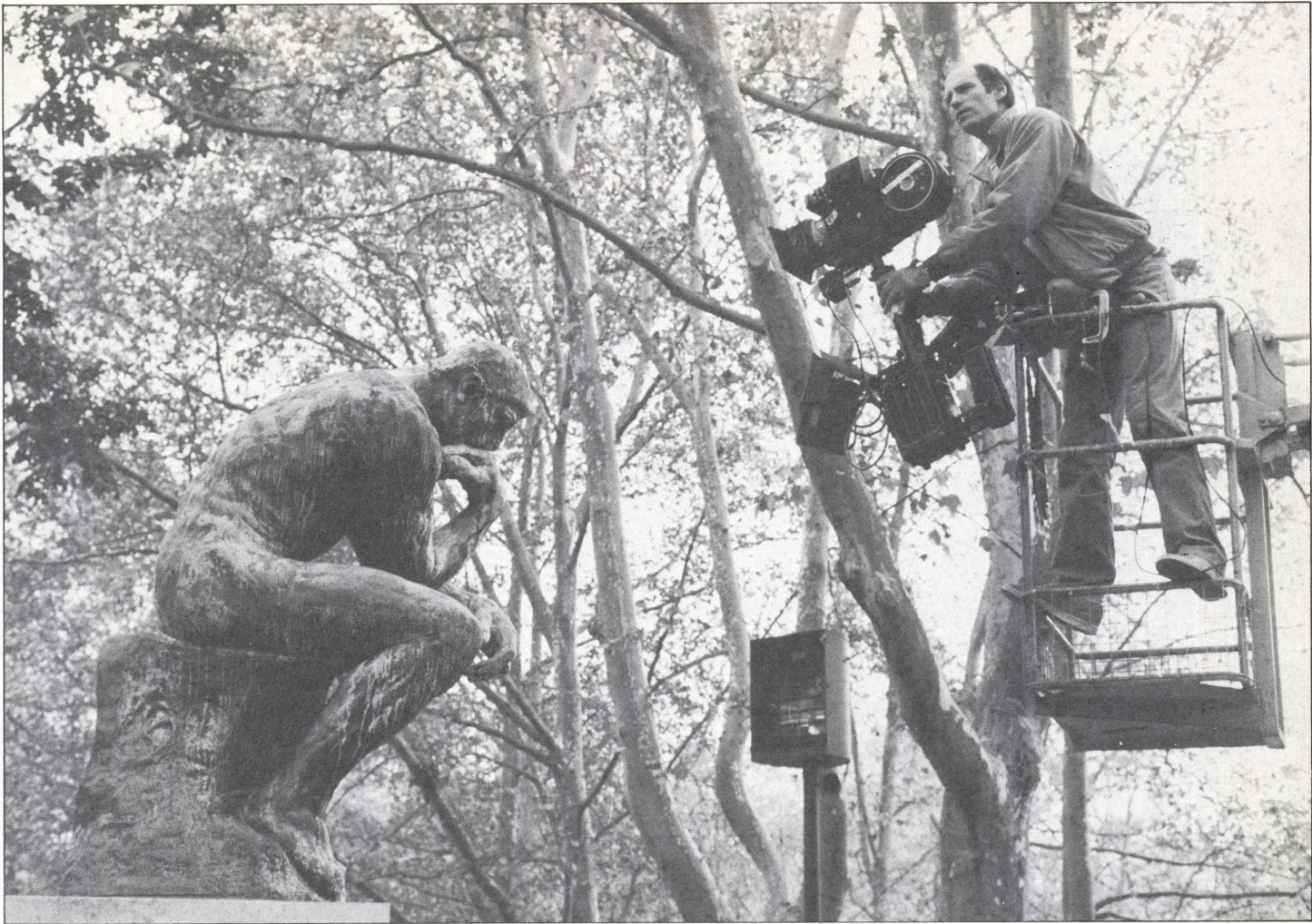


Photo by Joe Mosca

Feature Films

Wolfen
 Diner
 Taps
 Porky's
 Risky Business
 The Right Stuff
 King of Comedy
 Cotton Club
 Muppets Take Manhattan
 Falling in Love
 Ghost Busters
 Birdy
 Bad Boys
 Night Shift
 Purple Rain
 Windy City

Commercials

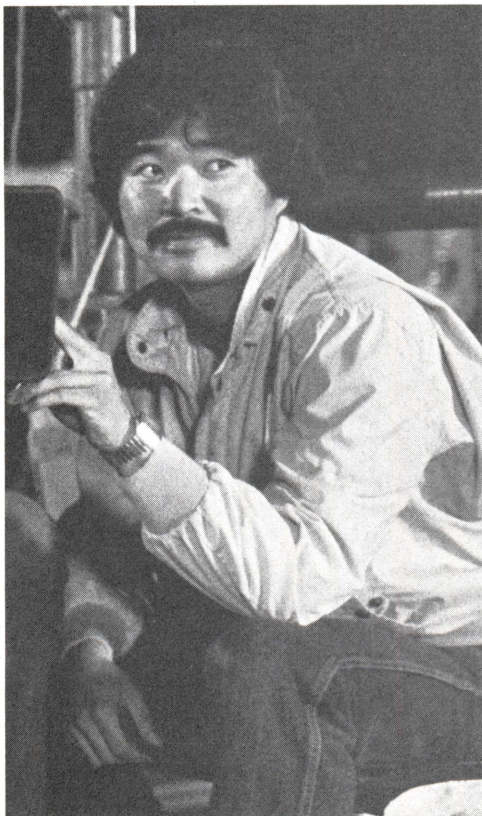
Saks Fifth Avenue
 American Express
 McDonalds
 Volkswagen
 Pepsi
 Digital
 Monsanto
 Conoco
 Nabisco
 New York Air
 Chase Manhattan
 Pony

TED CHURCHILL

Steadicam® and Panaglide® Photography
 212/691-0536

Using six 35BL3 cameras at once:

We're proud to tell you that
the talented people making INTO THE NIGHT
sometimes used as many as six
of our 35BL3s and PL lenses simultaneously.



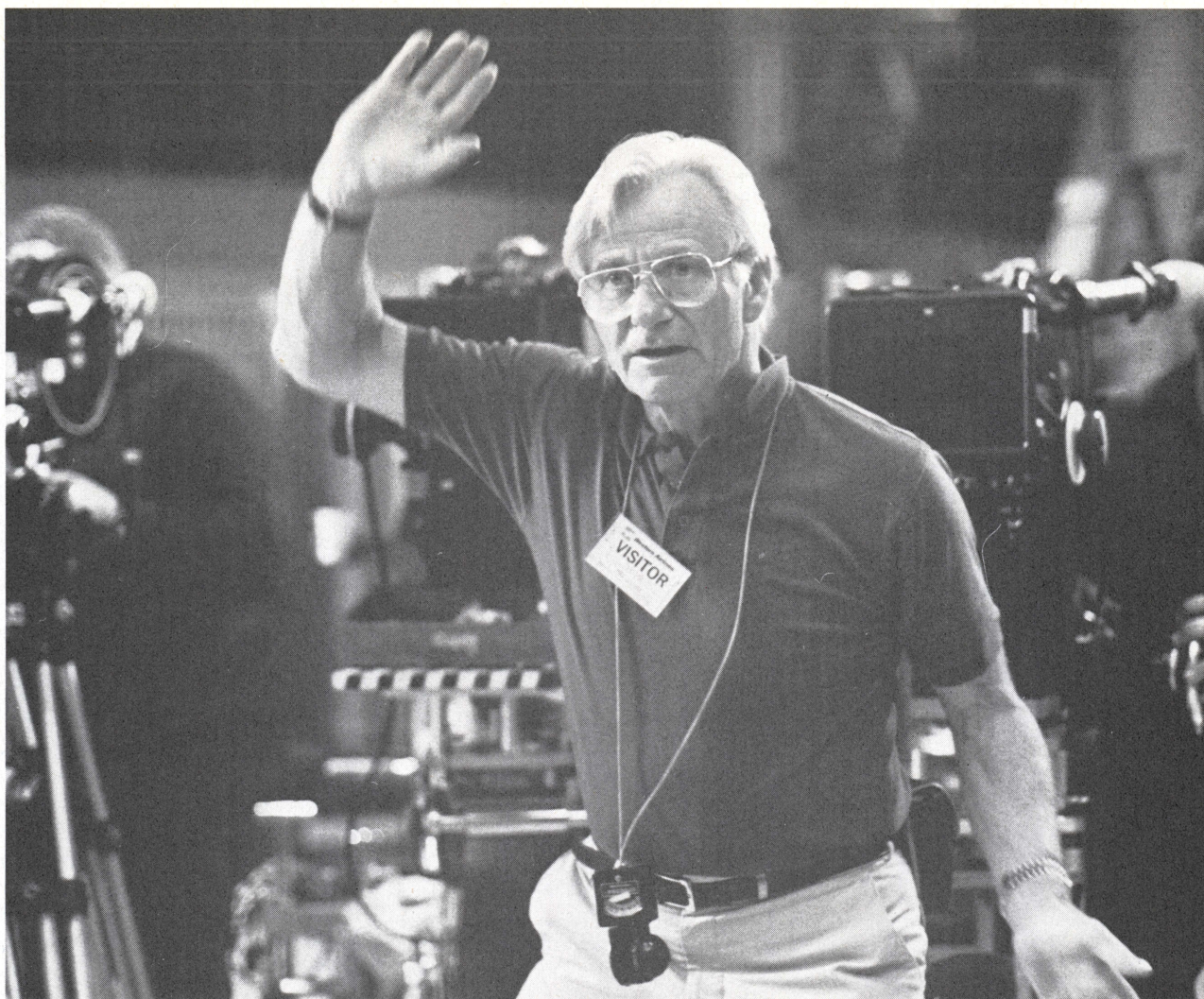
PHOTOS COURTESY OF INTO THE NIGHT PRODUCTIONS INC.

First Assistant
Glenn Shimada

“Because we used multiple cameras a lot, I had the extra job of Camera Coordinator,” says First Assistant Glenn Shimada. “I walked around with the Director and D.P. while they picked out camera angles.”

“Six cameras – no waiting!”

“Then I would radio their instructions to each of the crews – camera positions, focal length, subject, moves and so on. The crews had a standing joke: *Six cameras – no waiting!* and there was a lot of truth in that.”



Director Of Photography Robert Paynter B.S.C.

“We had about ten weeks of night shooting, all of it on location,” says Director of Photography Robert Paynter. “Clairmont’s backup was very good—delivering extra equipment to our crews in the middle of the night, sometimes at short notice.”

“Shooting with six 35BLs at once gave us better continuity control—with the violent crowd of extras at the airport, for example. We had to be in and out of there (and cleaned up) in a limited time, so it was very useful to get instantaneous multiple takes.”

**EQUIPMENT
IN DEPTH**

CLAIRMONT CAMERA

4040 Vineland, Studio City, CA 91604. (818) 761-4440

GITZA

VIDEO 65 YEARS PHOTO

RATED 10 BY

PROFESSIONALS
MAGAZINES
SCHOOLS
LECTURERS
AMATEURS
CAMERAMAKERS
REPAIRMEN
DEALERS
COMPETITORS
100,000'S OF HAPPY USERS
+ 1 = YOU ? TRY IT NOW !



100% FLUID HEADS
LEVELLING BALLS
EXTRA SOLID TRIPODS
FOR CAMERAS 5-250 LBS
FISHPOLES, MONOPODS

THE GITZO EXTRAS:

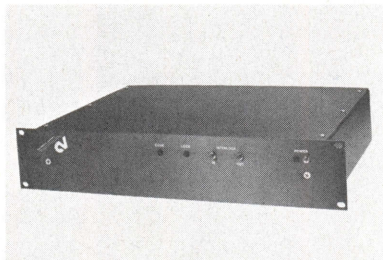
1. STRESSPROOF LIGHT METALS
AS USED IN AIRPLANES
 2. ROCK STABILITY, RUGGEDNESS,
TOP PERFORMANCE
 3. EASY, RAPID, FOOLPROOF,
SMOOTH HANDLING
 4. ANY EXTRA LOW, EXTRA HIGH,
SPECIAL POSITIONS
 5. 100 TRIPODS, 20 MONOPODS,
30 HEADS, 200 ACCESSORIES
 6. CUSTOM MATCHED FOR ANY
PERSON, ANY CAMERA
 7. VIRTUALLY INDESTRUCTIBLE
ALL METAL CONSTRUCTION
 8. 100% QUALITY, CONTROLS,
LIFELONG DURABILITY
 9. EASY, RAPID, MINIMAL SERVICE
BY USER—FOR EVER
 10. FULL GITZO WARRANTY
FOR LIFE — PLUS REINCARNATIONS
- THERE IS NO SUBSTITUTE**



35 YEARS
POB 427
WOODSIDE, NY, 11377
(718) 565-0004

Ask for GITZO Video or Photo Brochure AC

New Products



Hard Lock Synchronizer

Cine Video Lock, Inc., of Hollywood has announced a new hard lock synchronizer. Unveiled at the SMPTE Convention in New York City last fall, this synchronizer has a built-in VITC reader and will synchronize any 5800 Series Sony $\frac{3}{4}$ " video deck to any piece of film editing equipment hard-locked to single frame accuracy.

The initial enthusiasm for the product comes from film editors working with video who now can cut film sound tracks to a video program. A company spokesman explains, "It's a lot cheaper to cut film tracks and mix sound in film style than with video sweetening; plus you have greater precision and usually a better sound track." Additional machine interfaces and options will be available soon. For further information: Cine Video Lock Inc., 915 N. Highland Avenue, Hollywood, CA. 90039. (213) 464-1155.

Enhanced Video Converter

Hitachi Denshi America, Ltd. has announced the availability of its HD-210 enhanced video converter.

Hitachi engineering underscored the advancement in technology represented by the HD-210. Utilizing a new method of YC separation, the HD-210 incorporates a digital frame memory, a development of the Hitachi Central Research Laboratories. A standard NTSC signal is converted to an

RGB enhanced horizontal resolution signal and with twice the number of scanning lines for improved vertical resolution.

The vertical scanning lines are non interlaced, thereby eliminating line flicker and crawl and dot crawl. A built-in time base corrector allows the HD-210 to be used with VTR's and includes still field playback.

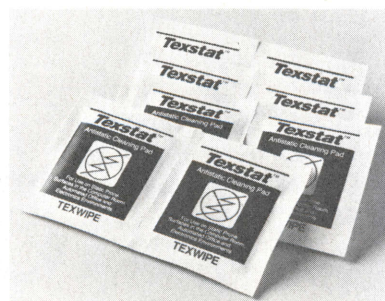
For more information contact Hitachi Denshi, 175 Crossways Park West, Woodbury, NY 11797. (516) 921-7200.

Centi-Static Cleaning

The Texwipe Company announces a Texstat™ antistatic cleaning pad, a convenient, premoistened pad which cleans and controls static on synthetic surfaces such as work-stations, desktops, and electronic equipment housings.

Each Texstat lint-free applicator is presaturated with the correct amount of a high-performance antistatic cleaning solution, then sealed in individual foil packets for product purity and ease of use. Each disposable pad will clean dirt, soils, ink marks, and dust from metal and plastic laminate surfaces, while effectively controlling dangerous electrostatic charges.

For further information, contact: The Texwipe Company, P.O. Box 308, Upper Saddle River, NJ 07458, (201) 327-5577.

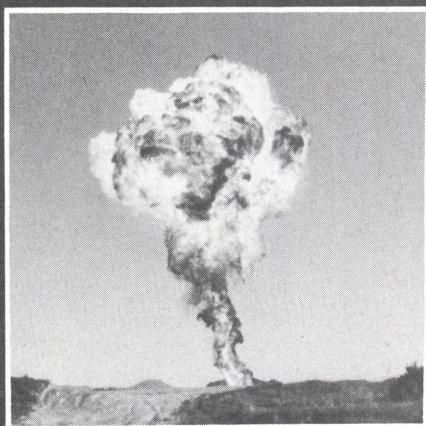


we got our shot!

"When we shot a 200' tall miniature atomic blast for the Columbia feature *Desert Bloom*, we needed a camera with easy set-up and a steady image at high running speeds. The IMAGE 300 provided these, *plus* mirror reflex viewing. We got our shot."

—Richard Edlund, A.S.C.

When you RENT the IMAGE 300 you get everything Richard Edlund, A.S.C. did. Check these features: ■ 24 to 300 fps ■ Dual Pin-Registered Intermittent Movement ■ BNC-R Lens Mount ■ Reflex Viewfinder System ■ Video Assist ■ Full Aperture ■ Beryllium Shutter, for more precision & image stability ■ 1000' Dual Coaxial Quick-Change Magazines ■ Strobe light synchronization.



The
IMAGE 300 is
available for
Rental now.

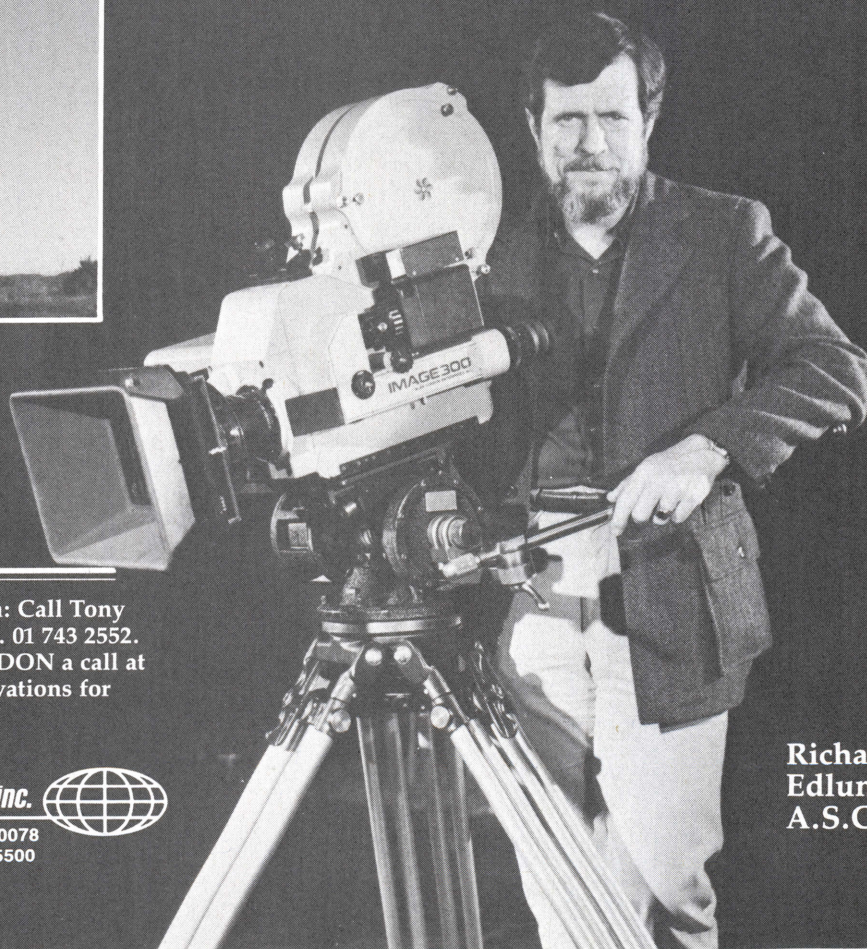
Soon in New York. In London: Call Tony Covell at Cinefocus, LTD. Tel. 01 743 2552. In Hollywood give TED LANDON a call at (213) 466-3561 and make reservations for your next shoot. MOST PROS DO.

alan gordon enterprises inc.



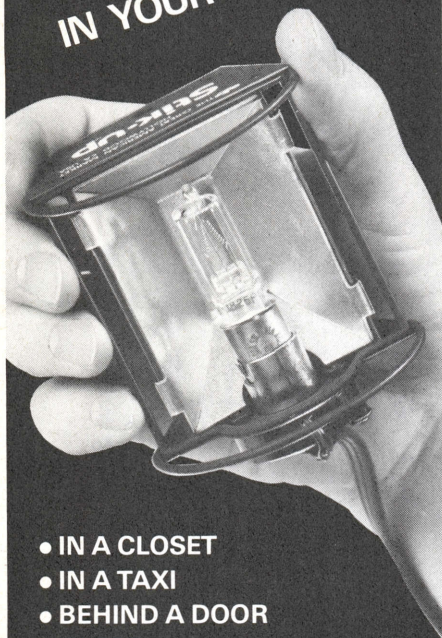
1430 Cahuenga Blvd., Hollywood, CA 90078
Telephone: (213) 466-3561 • (818) 985-5500
TWX: 910-321-4526 • Cable: GORDENT

Copyright © 1985 Alan Gordon Enterprises



Richard
Edlund
A.S.C.

THERE'S A
Stik·upTM
IN YOUR FUTURE...



- IN A CLOSET
- IN A TAXI
- BEHIND A DOOR
- IN BED
- HAND HELD
- UNDER A DIVING BOARD
- IN JAIL
- AT A ROCK CONCERT
- ON A STAGECOACH
- AT A FASHION SHOW
- UNDER A LUNCH COUNTER

It will make your lighting more effective wherever you need to conceal a small compact light source.

Stik-up, ideal for film, TV, stills. Up to 200W. Also 12V for battery operation. Weighs only 8 ozs. with cord. Stick it anywhere. Kit available.

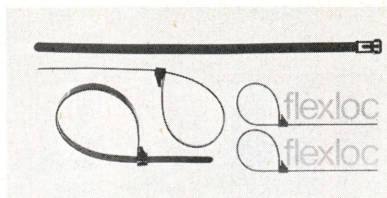
Write or call for info.

Stik·upTM

THE GREAT  AMERICAN MARKET

826 N. COLE AVENUE HOLLYWOOD CA 90038
TELEPHONE 213 461-0200 • TWX 910 494 1233

©1984

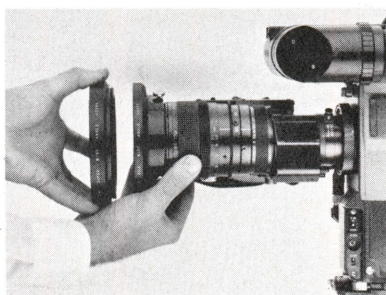


Cable Ties

Flexloc cable ties were recently introduced to filmmakers by Visual Departures, Ltd.

Flexloc ties are ideal for bunching cables attached to lighting, video, film, sound equipment and computers. Plus, a quick-release "pinch of the fingers" lock enables you to use the cable ties time after time. Made from tough, flexible nylon, Flexloc has a tensile strength of 50 pounds. Each 10-inch fastening strap is self-locking with a ribbed backing that permits diameter adjustments up to 2 3/4 inches and secures the bundle until intended release.

For more information, contact: Visual Departures, Ltd., 1601 Third Ave., New York, NY 10128. (213) 534-1718.



Adapter Set

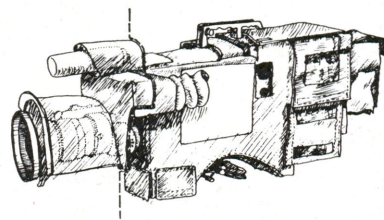
A new concept in wide angle attachments for video zoom lenses has been introduced by Century Precision Optics. This wide angle set consists of two precision manufactured elements. If only one element is used, it will increase the wide angle coverage of a zoom lens by 30%.

If two elements are stacked, the Century wide angle adapter set will increase the coverage by 50%. This economical set allows an existing zoom lens to serve as two additional fixed wide angle lenses.

For further information, contact: Century Precision Optics, 10713 Burbank, Blvd., No. Hollywood, CA 91601. (818) 766-3715.

Shoulder Case

Since introducing its original, trend-setting padded recorder cases a decade ago, Porta-Brace has developed cases and carriers for a widening range of video equipment, with one goal in mind – to combine durability, security, portability, and ease of use. Now, with the emerging importance of camera/recorders, Porta-Brace offers a full line of cases for BetaCam components and systems – allowing secure, comfortable field use of the various combinations of Beta components. Included are Quick-Draw Camera Cases and Hip-Carried Recorder Cases – as well as the new Shoulder Case.



This snug-fitting padded case on a BetaCam system (BVW 3 or BVP 3) will protect against bumps, scrapes, dust, rain and snow. You will never need to take it off – or want to take it off. Your camera/recorder will be protected on the job, around the job, and on the way to the job – on your shoulder and off, in fair weather and foul. With the detachable rain bonnet velcroed in place, even the camera lens is fully protected from the weather.

The shoulder case allows full, unhindered access to controls, indicators, and cassette – even when the rain bonnet is in place over the lens. It is light, non-bulky, trimly fitted. With the addition of the cushion shoulder pad, the jacketed BetaCam unit rides far more comfortably on the photographer's shoulder. This pad, made of soft, closed cell foam with a non-skid covering, pillows the weight of the unit without hindering normal use. It attaches and detaches instantly with Velcro.

For further information contact K&H Products, Box 246, North Bennington, VT 05257 (802) 442-9118.

Cinematographer Andrew Laszlo, A.S.C. Lights "Secret of Sinanju" with the New **QuartzColor** *ianiro* 12K HMI

Making its debut in a major production, cinematographer Andrew Laszlo found an ideal application for this great, new lighting instrument on the "Secret of Sinanju" set in New York.

The Sirio 12Kw, by Ianiro, adds to the famous Quartzcolor line the most powerful Fresnel spotlight available in the entire range of discharge type lamp systems.

Photometrics:

SPOT 6° 1/2 Peak Angle 6,500,000 Candela

DISTANCE	50'	75'	100'	125'	150'
Footcandles	2600	1156	650	416	289
1/2 Peak Diameter	5.2'	7.9'	10.5'	13.1'	15.7'

FLOOD 48° 1/2 Peak Angle 686,000 Candela

DISTANCE	50'	60'	70'	80'	90'
Footcandles	274	191	140	107	85
1/2 Peak Diameter	44'	53'	62'	71'	75'

Contact your local Strand Century Dealer or Strand Century, Inc., Department AC for further sales and performance information.



Excellence in Lighting Since 1929

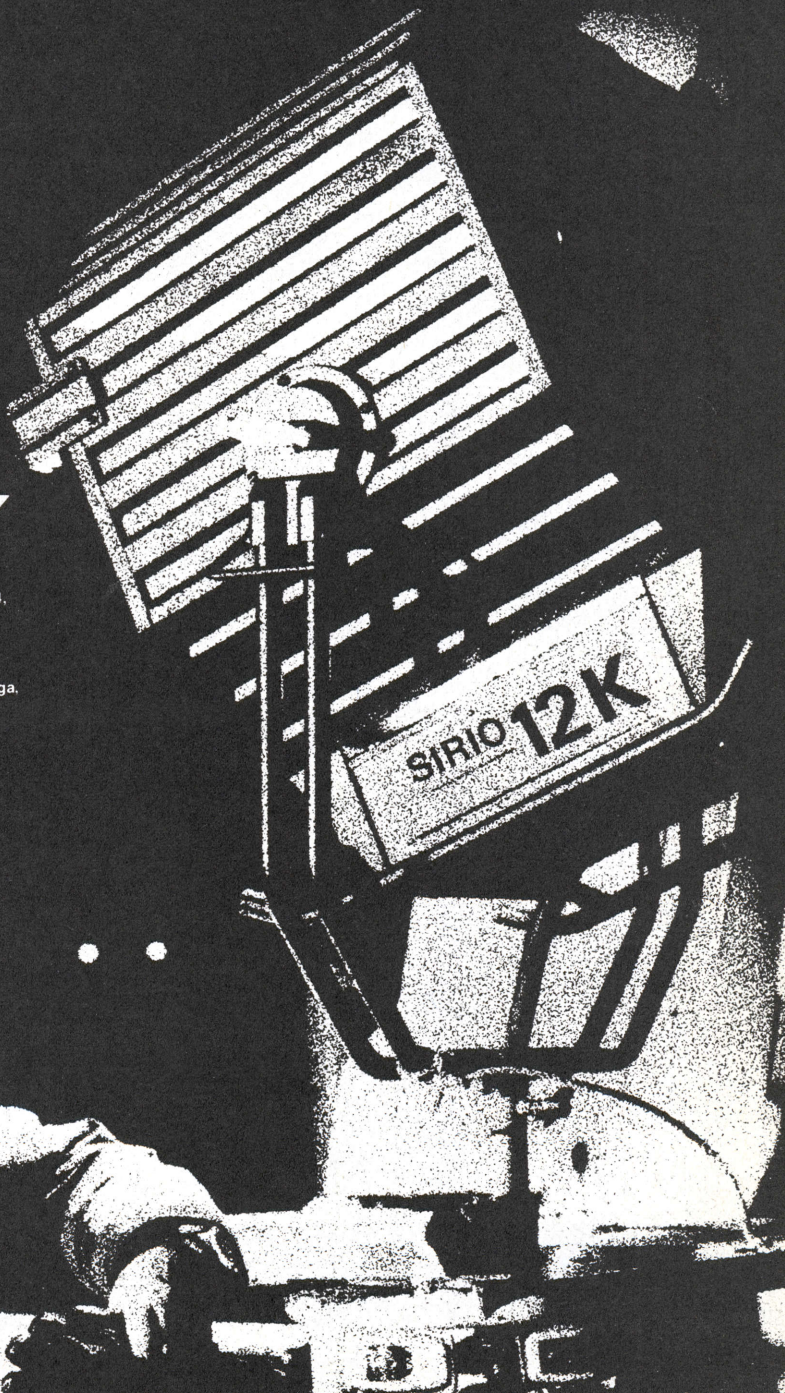
STRAND CENTURY

A Subsidiary of Rank America

Strand Century, Inc. 18111 South Santa Fe Avenue, P.O. Box 9004,
Rancho Dominguez, California 90224 Tel: (213) 637-7500, Telex: 664741

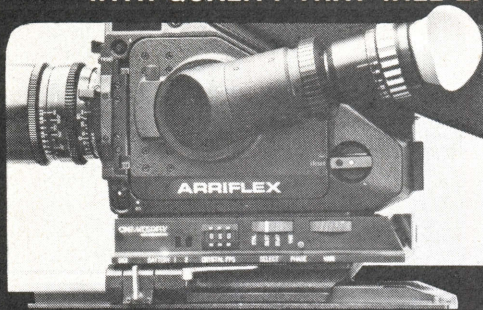
Strand Century, Inc. 20 Bushes Lane, Elmwood Park,
New Jersey 07407 Tel: (201) 791-7000, Telex: 130322

Strand Century Company, Ltd. 6490 Viscount Road, Mississauga,
Ontario, Canada L4V1H3 Tel: (416) 677-7130, Telex: 06968646



CRYSTAL HIGH SPEED CONTROL

WITH QUALITY THAT WILL ENHANCE YOUR ARRI-3

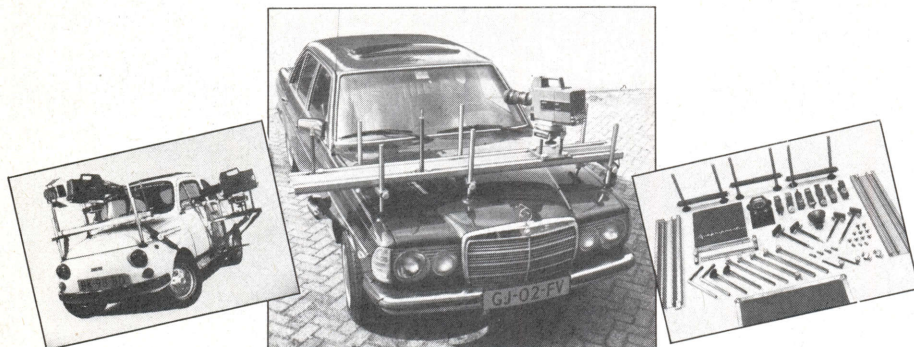


- 132 CRYSTAL SPEEDS
- 1 fps — 130 fps
- 29.97 & 23.976 fps
- PHASE SHIFTING BUTTON
- PRESETTABLE SPEEDS
- 2 BATTERY MONITORS
- LED TACH
- LED METERS/FEET
- 2 ACCESSORY CONNECTORS
- MACHINED ALUMINUM
- REPLACES RISER BLOCK
- SMOOTH SPEED RAMP

(213) 454-7351 (213) 454-3153
16059 Temecula St. • Pacific Palisades • California 90272

CINEMA TOGRAPHY
electronics

EGRIPMENT HOLLAND



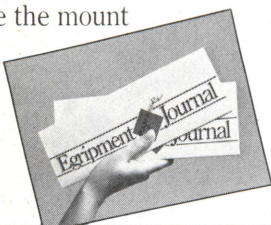
CAR MOUNT

A door mount consisting of two brackets in the open side window, from which the camera platform is suspended.

This platform can be fully adjusted in terms of height and left/right movement.

A leveller is fitted on this camera platform also, simplifying determination of the camera position once the mount has been assembled.

A bonnet construction consists



ing of an aluminium platform which is fitted on the bonnet by means of legs with suction cups.

The construction is held in place by bracing wires to the bumper, wheel arches and/or door openings. A camera leveller is placed on the camera platform which accommodates all types of cameras to a weight of 100 kg.

Ask for detailed information:

EGRIPMENT B.V.,
Machineweg 22,
1394 AV Nederhorst Den Berg,
Holland, Telex 10254 grima nl.
Phone 00 31 2945 39 88.



Portable Wireless Mike

The Model 67A portable diversity wireless-microphone receiver can operate from a 12-volt camera pack (or other external DC power source of + 10.5 to + 18 Vdc) or from its internal battery pack (four 9-V alkaline cells). Designed for on-location and portable use, the attractive, compact, lightweight 67A receiver is fully compatible with all "pro" transmitters equipped with the DYNEX® II audio processor, including Cetec Vega's new "T" Series transmitters.

The receiver's diversity operation virtually eliminates signal dropouts caused by phase cancellation from reflected signals. It operates on any crystal-controlled frequency between 150 and 216 MHz. The receiver pre-selectors are true two-pole helical-resonator filters. The 67A uses a combination of LC and multiple-pole crystal IF filtering. The wideband FM demodulator has low distortion (system THD is typically 0.3% or less) and excellent dynamic range. Because it is equipped with the DYNEX II audio processor, its usable dynamic range is in excess of 100 dB. Either line-level or microphone-level audio output is available via the front-panel XLR connector. Size is only 6.95 x 1.4 x 7 inches.

For additional information, contact Cetec Vega, P.O. Box 5348, El Monte, California 91731.

New Studio Rig

Cinema Products Corporation has announced the availability of a new "film style" studio rig, designed to provide EFP video cameras with a new range of control and versatility commonly encountered in motion picture cinematography. The new studio rig includes the ultra-smooth J-6 zoom control, and the Universal adjustable matte box which offers provisions for multiple front-of-the-lens filters, as well as other features common to cinematography. The CP video bridgeplate provides a

egripment  holland

Egripment products are sold in the U.S.A. exclusively by Matthews Studio Equipment Inc

UNDERWATER PHOTOGRAPHY



FILMING
DIRECTION
PRODUCTION
STUNTS
SATURATION

16 MM
35 MM
VIDEO
STILLS
POST PROD.

200,000 FT. STOCK FOOTAGE

10 MIN. REEL AVAILABLE

JACK MCKENNEY
(213) 663-3486

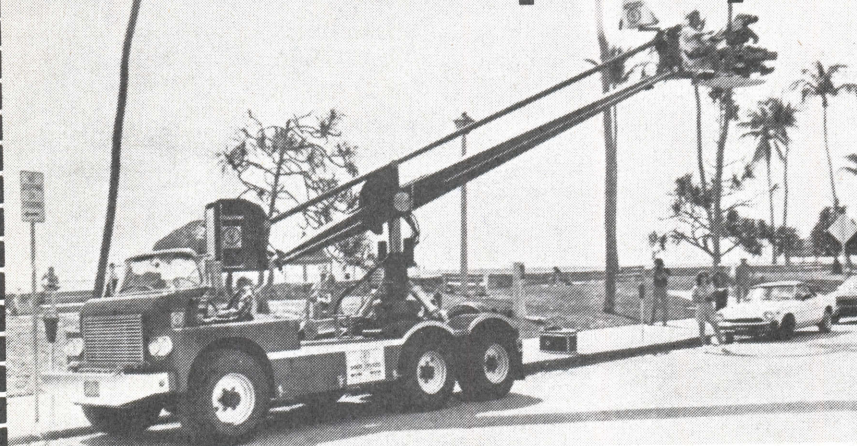
INTERFORMAT

OPTICALS • TITLES • BLOW UP

Super 16 post.
(but give us a call 'pre')

350 Townsend Street • San Francisco, California 94107 • (415) 777-3408

Professional Service. Southern Hospitality.



The Chapman Titan Crane

Arriflex 35BL3, 35-3
Arriflex 16SR2

Ikegami HL79DAL/EAL
Sony BVH 500A/110

Lighting • Grip • Video Truck • Sound
Hi Speed 35 mm & 16 mm • Underwater • Aerial

IMAGE DEVICES
INTERNATIONAL



ATLANTA

3311 Empire Boulevard
P. O. Box 82835
Atlanta, Georgia USA 30354
TWX 810 766-1060
PHONE 404 / 766-1111

MIAMI

1825 NE 149 Street
P. O. Box 61-0606
Miami, Florida USA 33181
Telex 51-9348 TWX 810 845-4242
PHONE 305 / 945-1111

OPEN UNTIL 9 PM
24 HOUR SERVICE AVAILABLE
IDI ships anywhere in the world

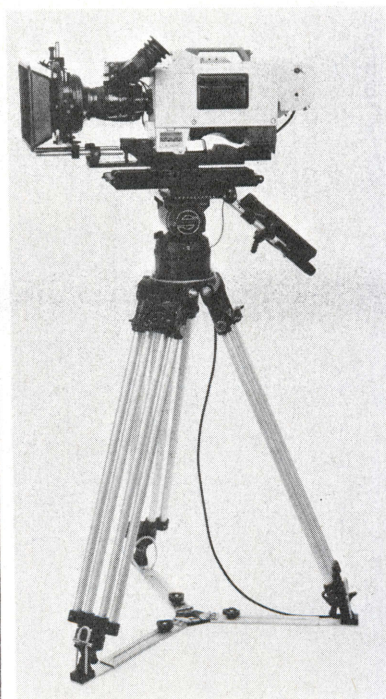
convenient base on which to mount the EFP camera and the adjustable studio matte box.

Most EFP video lenses can be custom-modified to interface with the self-contained J-6 Joystick Zoom Control. Once adapted, the J-6 utilizes the lens servo motor to yield the widest range of variable zoom rates ever—from 2 seconds to 30 minutes or more, depending on the specifications of the particular video zoom lens.

The Universal adjustable studio matte box is a fully professional studio matte box system that accommodates most 35mm cine, electronic cinematography and EFP video cameras. The system features rotatable stages for 4" x 5.65" square and 138mm round filters, with provisions for additional filters.

Cinema Products' "film style" studio rig may also be used with most film and electronic cinematography cameras. A full line of related accessories is available for enhancing the system.

For further information, please contact Cinema Products Corp., 2037 Granville Avenue, Los Angeles, CA 90025. (213) 478-0711.



Fluorescent light correction



Advancing art through advancing science

Lee have made the ultimate breakthrough in fluorescent light correction – a range of filters that can correct any tube, no matter what the size, pattern or ambient conditions.

Correction can be achieved at the light source and on the camera, using either polyester or resin filters. The

breakthrough comes as a result of extensive research and years of experience in the field.

At our U.K. Headquarters, our Technical Advisory Service is ready to give advice on any tube that you may have to deal with. Whatever the problem, or whatever information you require, contact:

Belden Communications Incorporated,
534 West 25th Street, New York NY 10001,
Contact: Mr. Michael Sheppard Tel: (212) 691 1910
Telex: 423571

West Coast Distributor
Cine Mills Corporation,
3500 W. Magnolia Avenue, Burbank, California 91505,
Contact: Mr. Wally Mills Tel: (213) 843 4560
Telex: 9104982768



LEE FILTERS

Lee Filters Limited, Central Way, Walworth Industrial Estate, Andover, Hampshire, SP10 5AN England

“Ikegami’s HL-95 Unicam can handle — and more.”

— John Hall, Director of Engineering
WDAF-TV, Kansas City, Missouri



gives you all the action you

The biggest eruption in the professional hand-held television camera market occurred with the introduction of Ikegami's UNICAM, a multipurpose Plumbicon® camera concept with a host of applications.

Utilizing a unique building block approach which incorporates the HL-95B basic camera head, various configurations are possible: Several ENG stand-alone cameras, combined camera-VTR units with a selection of 1/2 inch or 1/4 inch component recorders and remote controlled EFP cameras with multicore

cable or triax cable base stations can be assembled.

The versatility and flexibility of the HL-95 system is provided without sacrificing state-of-the-art performance in the areas of sensitivity, resolution and registration; these are achieved with minimum equipment size, weight and power consumption.

Pound for pound the HL-95 is the hottest little camera you'll ever hold in your hands.

For a demonstration of UNICAM and other Ikegami cameras and monitors, contact us or visit your local Ikegami dealer.

Ikegami

Ikegami Electronics (U.S.A.), Inc., 37 Brook Avenue, Maywood, NJ 07607

• East Coast: (201) 368-9171 • West Coast: (213) 534-0050 • Southeast: (813) 884-2046
• Southwest: (214) 233-2844 • Midwest: (312) 834-9774



In San Francisco —

PROFESSIONAL
MOTION PICTURE & VIDEO
SALES & RENTALS



USED 16MM CAMERAS AND RECORDERS SALE

- Canon Scoopic\$550
- CP-16A\$4000
- Eumig\$600
- Bolex Rex 5,
16-100 MST, 400'
mag\$5000
- Bolex Rex 4, 16-75
macro, Pentax
Spot Meter...\$1800
- Beaulieu R-16
.....\$2200

- Arriflex 16BL, 12-120, matte
box, 400' mag\$4700
- Arriflex 16S, 16, 25 & 85mm,
case\$2600
- Arri-S Underwater Housing
(plexiglass)\$800
- Bolex EBM\$1350
- Bolex Rex 4, 16-100\$1700
- CP-16, 12-120\$4000
- ACL, 12-120 macro 2 x 200'
mags\$7200
- Eclair ACL\$3500
- Eclair 16-35 Cameflex\$2500
- Mitchell R16, 12-120\$5500
- Nagra 4.2 Xstal\$4500
- Nagra III\$1500

- CAMERAS
- RECORDERS
- LIGHTING
- AUDIO
- GRIP
- VIDEO TAPE
- AUDIO TAPE
- 16/35mm FILM

- REPAIRS
- EQUIPMENT PARTS

Adolph Gasser
181 SECOND ST. (HOWARD)
S.F. (415) 495-3852

George L. George

The Bookshelf

Two well-researched and fully documented monographs expand the scholarly "Twayne's Filmmakers" series. **David Lean** by Michael A. Anderegg (\$21.95) and **Federico Fellini** by Frank Burke (\$19.95) carry perceptive studies of these directors' cinematic concepts and styles, critical appraisals of selected films, bibliographies, filmographies and references (*G.K. Hall, Boston, MA*).

The first volume in a new and promising series, the Directors Guild of America Oral History, is **Byron Haskin** by Joe Adamson. Informed and detailed, it covers a filmmaker whose career as director and cinematographer spanned the silent movie era from 1918 to features and television films in the late 60s (*Scarecrow, Metuchen, NJ, \$22.50*).

The director of **Napoleon**, the revolutionary triple-screen 1927 film recently restored to its original grandeur, is knowledgeably appraised in **Abel Gance** by Norman King. This meticulous and thoughtful study brings out Gance's visionary concepts, present or latent in most of his films (*U. of Illinois Press, Champaign, IL, \$11.95*).

Director Jean Negulesco's autobiography, **Things I Did . . . and Things I Thought I Did**, is an enjoyable tale, largely anecdotal and full of candid reminiscences, humorous observations and stimulating accounts of encounters with legendary stars (*Linden/S&S, NYC, \$18.95*).

Swiss director Alain Tanner's approach to filmmaking is discussed by Jim Leach in **A Possible Cinema**. Tanner's special concerns and cultural values that shape the form and content of his films are closely examined in this detailed and insightful study (*Scarecrow, Metuchen, NJ, \$15*).

Pauline Kael's **The Citizen Kane Book**, now in paperback, is a

carefully researched and incisive analysis of Orson Welles' classic film. Well illustrated, this book includes the shooting script by Herman J. Mankiewicz and Welles (*Limelight, NYC, \$16.95*).

Allen Eyles' **James Stewart** and Jhan Robbins' **Everybody's Man** offer parallel biographies of the quintessential personification of the all-American male. In a way, these books complement each other, with Eyles emphasizing Stewart's roles and providing a full filmography, while Robbins plays up the intimate life story angle (*Stein & Day, NYC, \$17.95; Putnam, NYC, \$14.95*).

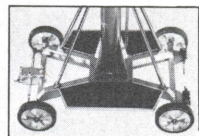
Two books mark the Golden Anniversary of the Three Stooges and their 400 zany comedies. In **The Three Stooges Book of Scripts**, Joan Howard Maurer assembles scenarios, stills and memorabilia of the comedians' busy careers. In **Stooge Mania**, Tom Hansen and Jeffrey Forrester compile an extravaganza of photos, puzzles, trivia and assorted collectibles (*Citadel, Secaucus, NJ, \$19.95; Contemporary, Chicago, \$9.95*).

Jay Leyda's classical study of the Russian and Soviet cinema, **Kino**, now in paperback, is a definitive work, documented with original material and extensively researched. In **Kino-Eye**, the collected writings of Soviet director Dziga Vertov, edited by Annette Michelson, reveal the innovative approach to the art and practice of film demonstrated in **The Man with the Movie Camera**, Vertov's major film (*Princeton U. Press, Princeton, \$12.95; U. of California Press, Berkeley, \$35*).

An anthology expertly edited by Thomas Waugh, **Show Us Life**, includes 25 articles on the documentary film considered as an instrument of revolutionary social change. Contributors form an international roster of filmmakers, political activists and scholars (*Scarecrow, Metuchen, NJ, \$37.50*).

EGRIPMENT HOLLAND

The Academy Award winning Egripment Tulip Crane you probably know. Now we are presenting the New Tulip crane SG

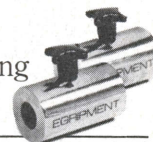


SECOND GENERATION



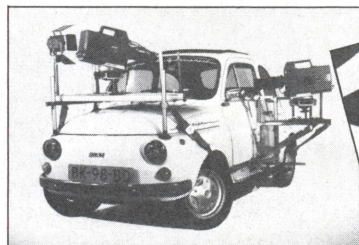
A special luxury version of the Egripment Tulip crane with a lot of extras

- ◆ Luxury comfortable seats
- ◆ Two fine adjustment weights
- ◆ "All weather" super chromised extra accessories
- ◆ Two light supports on camera platform
- ◆ Super finishing
- ◆ Chromised operating bars all around

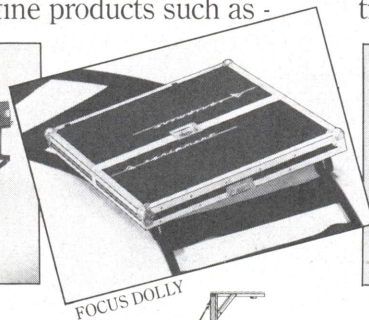


As a leading company in manufacturing of camera support equipment, Egripment fabricates a full range of fine products such as -

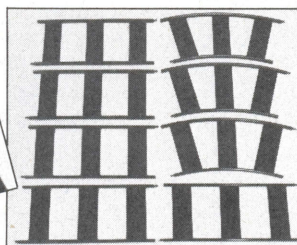
Skymote crane - Junior crane - Car mount - Super grips - Mini jib - Doorway dolly - Focus dolly - Star-track dolly - Focus track - Camera clamps etc. etc.



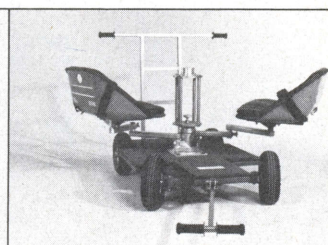
CAR MOUNT



FOCUS DOLLY

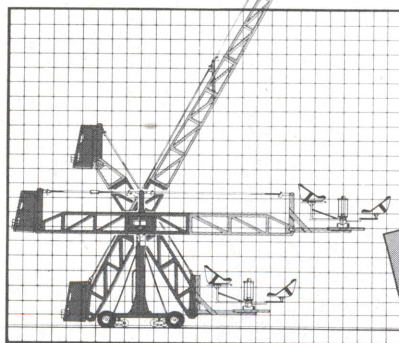


FOCUS TRACK

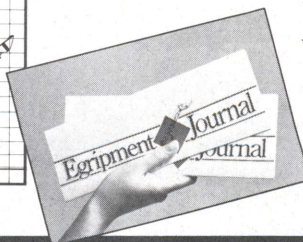


DOORWAY DOLLY

3 IN ONE SYSTEM



The Egripment 3 in one system enables the user to convert the standard Tulip Crane into a small, - (Junior Crane) or a sky high Tulip (Sky-Mote).



Ask for detailed information:

EGRIPMENT B.V.,
Machineweg 22,
1394 AV Nederhorst Den Berg,
Holland, Telex 10254 grima nl.
Phone 00 31 2945 3988.

egripment  *holland*

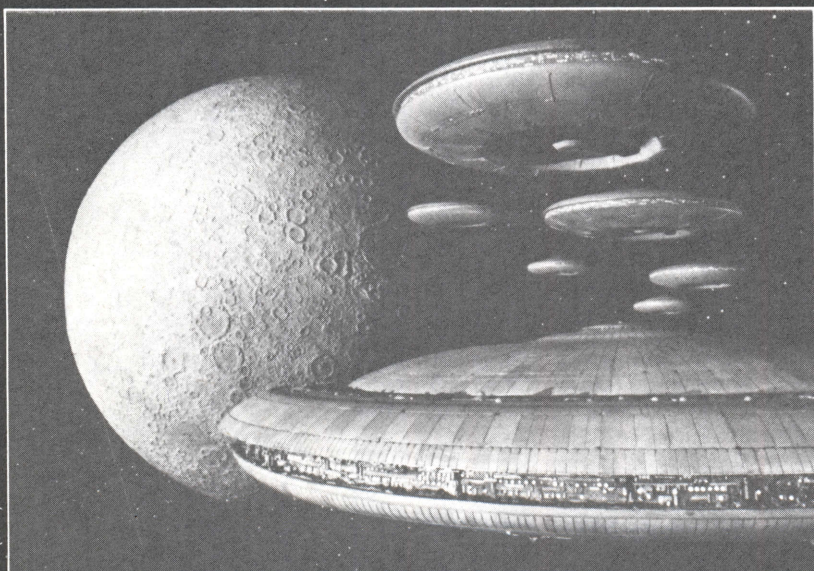
Egripment products are sold in the U.S.A. exclusively by Matthews Studio Equipment Inc.

COLT 
HELICOPTER LTD.



Video and film aerial specialists
 CONTINENTAL Helicopter mounts
 (212) 929-1156

DAVID STIPES/RICHARD BENNETT



David Stipes Productions designs and produces titles and special photographic effects with miniatures, motion control, matte paintings and animation for the motion picture, television and commercial industries. Take a look at David's work, call **(818) 765-6390**.

Richard Bennett, of Cinema Engineering Company, designs, manufactures and modifies special photographic equipment for the motion picture, television and commercial industries. Need special equipment? Call **(818) 765-5340** and see if Richard can help.

Vintage portraits of stars, and new photographs by Horst, are assembled with taste and sophistication in **Return Engagement**. James Watters' sensitive text enhances this superb collection of 74 nostalgic images of actresses experiencing the joys and sorrows of aging (*Potter/Crown, NYC, \$24.95*).

A stimulating appraisal of the Agent 007 phenomenon, Raymond Benson's **James Bond Bedside Companion** accumulates virtually all known facts and figures about the James Bond world, from detailed recaps of films, their directors and performers, to Bond's taste in wines, weapons and women (*Dodd Mead, NYC, \$19.95/\$12.95*).

Maryann Oshana's selected filmography, **Women of Color**, is an annotated listing of some 1000 English-language feature films released between 1930 and 1983, portraying nonwhite female characters essential to the plots, with synopses, cast-&-credits, and extensive cross-indexing (*Garland, NYC, \$30*).

Patricia Warren's large format volume, **The British Film Collection 1896-1984** is a fascinating pictorial history that chronicles, in some 1000 photographs, Britain's significant contribution to cinema art (*Merrimack, Salem, NH, \$24.95*).

In **The Hollywood Novel and Other Novels About Film**, Nancy Brooker Bowers lists and annotates some 500 works of fiction set in Hollywood and featuring characters involved in the film industry - a valuable reference tool covering the 1912-1982 period (*Garland, NYC, \$44*).

The frequently observed similarity between dreaming and watching a film is used by Prof. Robert T. Eberwein in **Film and the Dream Screen** as the basis for a psychoanalytical study of cinema as a dream-like experience (*Princeton U. Press, Princeton, \$27.50*).

BIRNS & SAWYER camera rental wants to STAMP OUT MUSIC VIDEO



MUSIC VIDEO **FILM**

Not because we dislike the product, but because Music Videos usually aren't videos — they're films. Michael Barnard Productions shoots a lot of Music Films — here, for example, doing Sam Harris for Motown. Michael's camera choice — an Arriflex 35III from Birns & Sawyer. As Michael puts it, "The look I'm after demands shooting on film, and the equipment I'm after must perform flawlessly. Birns & Sawyer is always my first choice."

When the look is critical, we'll come through for you. Motion picture cameras and lenses from Birns & Sawyer.



BIRNS & SAWYER, INC.

1026 N. Highland Ave., Hollywood, Calif. 90038
(213) 466-8211 Cable BIRNSAW TELEX 673280

MANY CAMERAS CAN GO TO THE MOON, BUT ONLY ONE CAN GET INTO THOSE HARD- TO-REACH PLACES.

A lot of camera manufacturers make very large claims. But here's one that has the ability to make a very small claim:

Sony Betacam™—it gets into those confined, all but impossible-to-reach places that others can't, like Milton Berle's bedroom.

This unrestricted mobility is one reason why Betacam is the only one used to shoot the hit T.V. show "Lifestyles of the Rich & Famous." Frank Beacham of Television Matrix, the show's Hollywood production company, chose Betacam because "it's the only system we've found that celebrities welcome into their homes. Thanks to the Betacam, our crews have gotten incredible interviews that would have been missed with conventional video equipment."

Of course, the Betacam has reached other formidable places. Rock Solid Productions' Geoffrey Leighton used Betacam to shoot the behind-the-scenes documentary

of the Jacksons' "Body" video. "Betacam captured all the vibrant feeling and color of the production without getting in the way of the film crew; the Jacksons never lost a beat in front of the Betacam. It made all the difference."

Quotes such as these were prompted by more than remarkable mobility—Betacam's quality is equally astounding. Both the Saticon™ and new Plumbicon™ versions consistently render superior video. Because Betacam offers exceptional resolution, registration and signal-to-noise ratios.

So, if you're interested in the world's smallest, lightest, most compact high-quality camera/recorder, the one that you don't have to be rich and famous to afford, contact your Sony representative. And maybe you, too, will wind up in the boudoir of an idol like Uncle Miltie.

SONY
Broadcast



**Multi-axis stepping
motor control**

**Interval-
meter/timer**

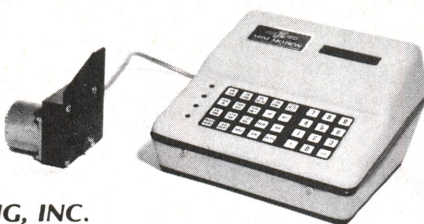
Animation camera
See ANICAM in next issue.

Stepping motor control

INTERVAL-TIMER STOP-MOTION CONTROL

All-in-one control made possible by fully programmable Z80 micro-processor.

Use ITSM to control camera motor functions, such as film advance, direction, preset count, total count, exp. time, lapse time, shutter open/closed, and capping shutter movement. Available for AC or DC motor operation.



J-K CAMERA ENGINEERING, INC.

5101 San Leandro St., Oakland, Ca. 94601, (415) 534-9018

Calendar

April

April 14-18, 1985

**National Association of
Broadcasters Annual Convention**
Las Vegas
1171 N. Street
Washington DC 20036 (202) 293-3500

April 14-18, 1985

National Computer Graphics Assn.
Dallas, Tex.
Computer Graphics '85
8401 Arlington Blvd., Suite 601
Fairfax, VA 22031

April 22-25, 1985

Audio Visual Exhibition
London, England
British Information Services
845 3rd Ave.
New York, NY 10022

April 28-May 1, 1985

**Audio Visual Management Assoc.
National Conference**
San Diego, California
Richard Joy
Box 821
Royal Oak, MI 48068 (313) 549-6582

April 30-May 1, 1985

Training Skills Workshop
Chicago
BNA Communications Inc.
9439 Key West Ave.
Rockville, MD 20850. (301) 948-0540

May

May 11, 1985

SMPTE/USC Spring Seminar
Los Angeles
Stereo for Television
USC College of Continuing Education
(213) 743-7469

May 12-16, 1985

**Society of Photographic Scientists
& Engineers**
38th Annual Conference
Atlantic City, NJ
7003 Kilworth Lane
Springfield, VA 22151

PURE ESCAPISM. Tiffen® Double Fog Filters.

Unlike conventional fog filters, Tiffen Double Fog filters let you escape into a world of dense fog and muted contrast...without losing purity of detail. They're American-made. And made to perform. That's why Tiffen is the first choice of motion picture and video cameramen, with the largest selection of different effects and densities anywhere. Even unique filters made to your specifications. And all backed by an unprecedented 10 year limited warranty. At Tiffen, we're responsive to the needs of professionals. And that makes a difference.

TIFFEN
The filters more professionals use.

For information call TOLL-FREE 1-800-645-2522. Or write TIFFEN, 90 Oser Ave., Hauppauge, N.Y. 11788.
In New York State call (516) 273-2500 • Telex:22-1640.

Ikegami's HL-79E gets me through with flying colors—every time."

Bill Napier, Director of Engineering WBTV, Charlotte, North Carolina

The HL-79E camera is adding another dimension to the phrase "The Great Outdoors" as more users discover that the world's best ENG camera is also the best for EFP.

And with over 5,000 HL-79 cameras sold, the legend continues to soar.

On or off your shoulder, the Ikegami HL-79E is still the unchallenged leader with features that include Dynamic Detail Correction, Chroma Aperture Correction, Highlight Aperture Correction and Auto Contrast Compression. Plus, the HL-79E offers superior contrast range, S/N ratio, registration accuracy, resolution, viewfinder performance and more.

As an EFP camera, the HL-79E can be used in various systems configurations, and controlled remotely by the MA-79 Multicore Adapter through multicore cable (up to 300 meters), or by the TA-79E Triax Adapter through triax cable (up to 2,000 meters). Available viewfinders include 1½, 4½ and 3 inch.

The camera can be set-up using conventional manual techniques or an optional microprocessor assist.

With the HL-79E as an EFP or ENG camera, the sky's the limit.

For a complete demonstration of the HL-79E and other Ikegami cameras and monitors, contact us or visit your local Ikegami dealer.

Ikegami

Ikegami Electronics (U.S.A.), Inc.,
7 Brook Avenue,
Fairfield, NJ 07607
East Coast: (201) 368-9171
West Coast: (213) 534-0050
Southeast: (813) 884-2046
Southwest: (214) 233-2844
Midwest: (312) 834-9774



COLUMBIA
COLLEGE

COLUMBIA
COLLEGE

Approved for Veterans
Financial Aid Available

STUDY IN HOLLYWOOD—Center of motion picture and television production. Our graduates work at motion picture studios and TV networks here, around the nation and around the world.

COLUMBIA COLLEGE

925 No. La Brea Ave.
Hollywood, California 90038
(213) 851-0550

Rick Tiedemann



Photo by Mike Di Ieso

STEADICAM®

718
212-596-3418
(BROOKLYN)

305-583-3326
(FT. LAUDERDALE)

617-338-6769
(BOSTON)

May 14-19, 1985

International Telecommunication Union

Singapore
Asia Telecom 85 Conference
Place des Nations, CH-1211
Geneva 20, Switzerland

May 16-17, 1985

Motion Picture & Television Engineering Society of Japan

17th Equipment Exhibition
Science Museum, Tokyo
Sankel Bldg. Annex 1-7-2, Otemachi,
Chiyoda-ku, Tokyo 100

May 18-19, 1985

Tahoe Film & Video Workshops

Cinematography & Lighting, Special Effects
Dallas
Box 969 AC
Truckee, CA 95734 (916) 587-4500

May 19-22, 1985

4th International Conference on Television Drama

Michigan State University
East Lansing, MI (517) 355-4714

May 19-23, 1985

Society for Technical Communication

Houston, Texas
Audiovisual Conference & Competition
332 Iowa Court
Ridgecrest, CA 93555 (202) 737-0035

May 20-23, 1985

Los Angeles ITVA

Videoshow and Video Production
Conference
Long Beach, CA
Lisa Welp, 51 Sugar Hollow Road,
Danbury, CT 06810 (203) 743-2120

May 25-26, 1985

Tahoe Film & Video Workshops

Cinematography & Lighting, Special Effects
Atlanta
Box 969
Truckee, CA 95734 (916) 587-4500

May 29-June 1, 1985

ITVA International Conference

New Orleans
Inez Wehrli, ITVA 6311 N. O'Connor
Road, #110
Irving, TX 75039

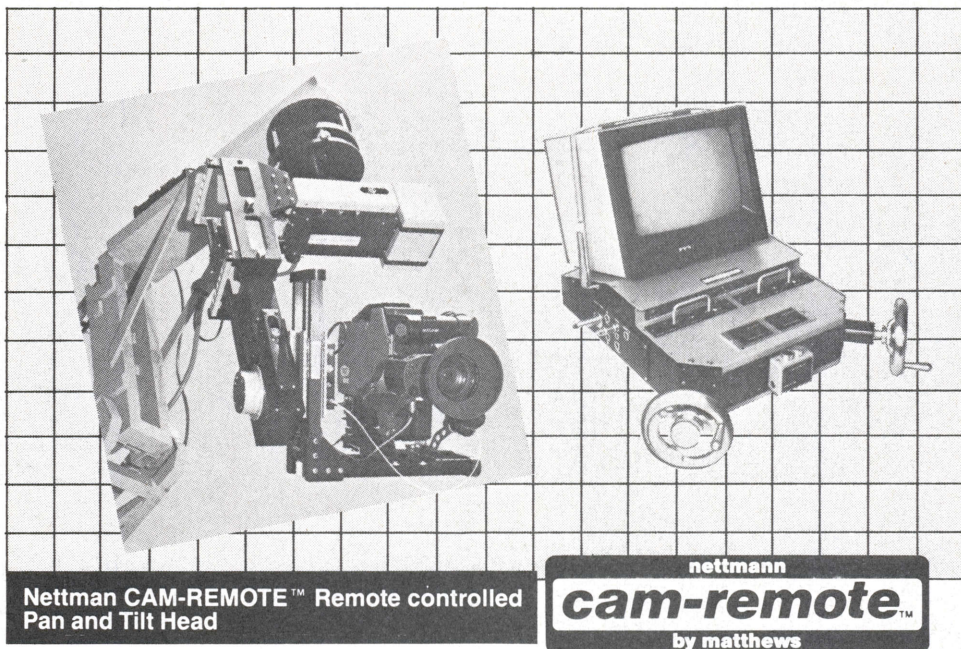
June

June 2-8, 1985

International Film/Video Workshops

Camera Workshop & Script Writing
Rockport, ME 04856 (207) 236-8581

A pan and tilt head, for shots you couldn't make before. At Camera Mart.



The CAM-REMOTE™ is really something special.

This production quality, remote controlled unit can just as easily be used on a crane, a dolly or from any fixed location. Its highly sophisticated electronics allow *360° movement in any direction*. No cables to wrap. And all lens and camera functions are controlled remotely from a console which offers several controlling options.

Here, truly, is a state-of-the-art pan and tilt head that opens new creative vistas in film and tape production and makes "impossible" shots not only possible, but simple.

Designed by two-time Academy Award winner Ernest "Bob" Nettmann, the CAM-REMOTE™ brings a new element of safety to action and special effects photography, since it allows dangerous scenes to be captured from a safe distance or an unusual perspective.

It's new, and, as you'd expect, it's available right now from Camera Mart.

The more you know about video, the more you can rely on Camera Mart.

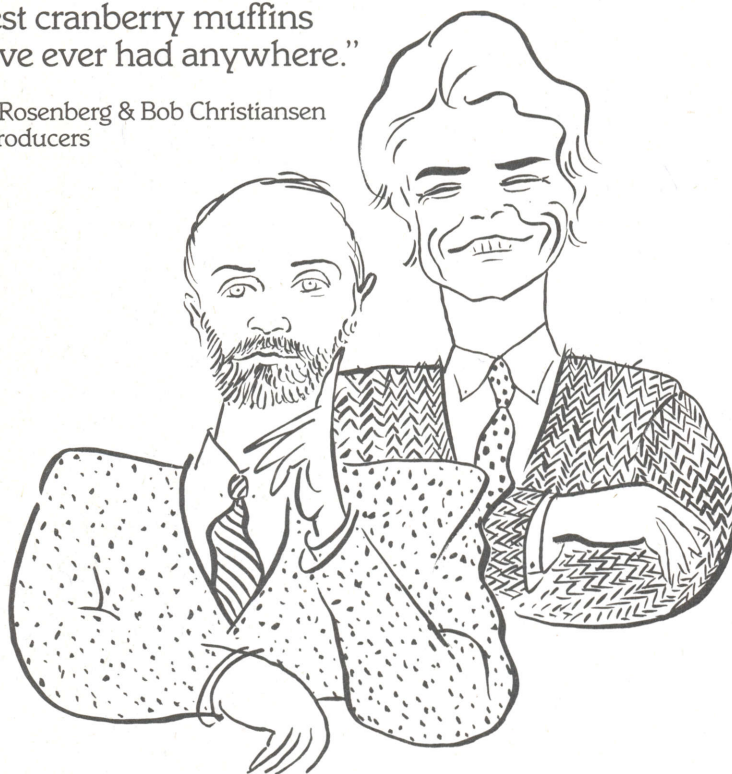
The Camera Mart, Inc.

456 West 55th Street, New York 10019 • (212) 757-6977/Telex: 1-2078
304 First St., Liverpool, NY 13088 • (315) 457-3703

Sales • Service • Rental

"Massachusetts has the finest Film Bureau we have worked with in all the many states we've been in . . . and the finest cranberry muffins we've ever had anywhere."

Rick Rosenberg & Bob Christiansen
Co-Producers



"The studio, of course, wasn't sure we should go, they insisted we'd all get pneumonia and die. But we were in and out exactly on schedule, thanks to the excellent cooperation of the Film Bureau," said Rick Rosenberg and Bob Christiansen, co-producers of the Columbia Pictures Television/CBS miniseries Robert Kennedy and His Times.

"Shooting in Massachusetts

added tremendously to the artistic integrity of our film."

And why not. We offer unbeatable locations, efficiency in scouting them, and a Film Bureau with an uncanny ability to cut through red tape. Quickly.

And it's all in the same spirit of cooperation you'll find everywhere in Massachusetts. Bob and Rick found it from teamsters to caterers, from crew to equipment suppliers, from Town Halls to the State House.

"Everyone was very cooperative and terrific," they said, "very professional. We felt enormous support from the Governor and local officials and the Film Bureau was on the phone all the time—getting results."

Come work in the state where actions speak louder than words. Come work in Massachusetts. For free information on shooting here, call or write today.

Boy can we act!

MASSACHUSETTS FILM BUREAU

June 11-13, 1985

**University Photographers
Association Annual Symposium**

University Guelph, Ontario, Canada
Write Ted Carter, University of Guelph,
Ontario, Canada N1G 2W1
(519) 824-4120, Ext. 3641

June 9-15, 1985

**International Film/Video
Workshops**

Film Lighting, Acting, Assistant Directors
and Production Managers
Rockport, ME 04856 (207) 236-8581

June 16-22, 1985

**International Film & Television
Workshops**

Rockport, ME
Directing, Documentary Films, Video
editing, Sound Recording
Rockport, ME 04856 (207) 236-8581

June 18-21, 1985

**North American Television
Institute Production Workshop**

Philadelphia
Knowledge Industry Publications, Inc.
701 Westchester Ave.
White Plains, NY 10604. (914) 328-9157

June 23-29, 1985

**International Film & Television
Workshops**

Rockport, ME
Film Editing, Electronic Cinematography,
Film Forum
Rockport, ME 04856 (207) 236-8581

June 27-29, 1985

Show Biz Expo '85

Santa Monica
Conference, exhibition of computer
hardware, software used in tv, film, music
industries Live Time Inc., (213) 668-1811

June 30-July 13, 1985

**International Film & Television
Workshops**

Rockport, ME
Film and Video Production
Rockport, ME 04856 (207) 236-8581

July

July 7-10, 1985

Rochester Institute of Technology

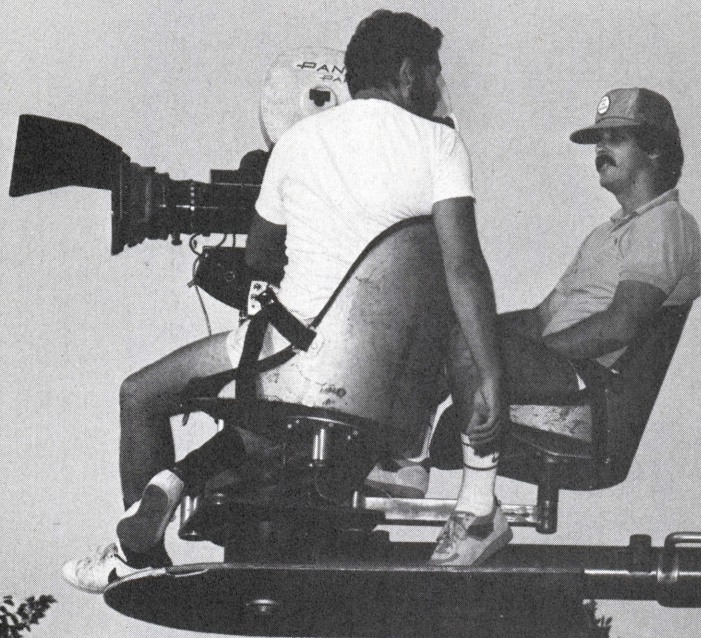
Preservation of Color Photographs
Rochester, NY
RIT/T&E Seminar Center
One Lomb Memorial Dr., P.O. Box 9887
Rochester, NY 14623 (716) 475-2757

July 21-27, 1985

Tahoe Film & Video Workshops

Cinematography & Lighting, Special Effects
Box 969
Truckee, CA 95734 (916) 587-4500

The hours. The effort. The cast.
The crew. The moment.



© 1984 De Luxe Film Laboratories, Inc.

Count on us!

You need experienced people who will make that magic moment reality. People who take the time to make it right. People you can trust.

No matter where you are or what the time, De Luxe is ready to help.

de luxe laboratories, inc.



1377 North Serrano Avenue, Hollywood, CA 90027 • (213) 462-6171 • 1-800-2-DELUXE



*Harry Perry ready to
crank the Akeley for
Wings.*

Wings – Epic of the Air

George Turner

World War I, like all wars, was a dirty, tragic undertaking. It was also dramatic and colorful, certainly more so than some recent encounters in more enlightened times.

The combat aviators were the nearest thing to the questing knights of old the war offered. The rickety little fighter planes made the same demands on the pilots that a spirited steed demands of a horseman. Combat was close and personal. There was a code of chivalry that governed the gentlemen of the air and a spirit of adventure that was denied the poor blighters on the ground.

A young writer who had flown against the Germans when he was not yet 20, John Monk Saunders, wrote a novel called "Wings" in which he tried to capture the mystique of combat flying. In February 1926 he met with Jesse L. Lasky, who with Adolph Zukor headed what was then the largest American movie company, Paramount Pictures. Saunders expressed his belief that words were not sufficient to tell the story; only the motion picture could do it.

The more Lasky thought about it, the more he liked the idea.

Lasky envisioned a massive production that would become the successor to MGM's *The Big Parade* of 1925. The cost would be heavy; more, probably, than his associates would be willing to invest. *The Big Parade* had been possible due to the cooperation of the Department of Defense; Lasky, therefore, told Saunders to go to Washington and try to get government assistance. Saunders recalled: "In such an event, Mr. Lasky said, he would bring the full resources of the Paramount Famous Lasky Corporation to bear upon the men and material provided." He left for Washington that night.

With moral support from Will H. Hays, head of the Motion Picture Producers and Distributors of America, Saunders interested Major General C. Mck. Saltzman, Chief of the Signal Corps, Major General John L. Hines, Chief of Staff, and Major General Mason M. Patrick, Chief of the Air Corps, in the project. Two weeks after his meeting with Saunders, Lasky was told by Secretary of War Dwight F. Davis that the War Department would cooperate with Paramount under certain conditions. Davis suggested that the military aspects could best be filmed in the San Antonio, Texas, area, home of Kelly Field and Camp Stanley.

The government's conditions were that the picture must be made in such a way that it could be construed as a training program, that the picture could not be released until it received War Department approval, that Paramount would pay for all damages incurred during production, that \$10,000 in life insurance must be carried on each man who worked in the picture, and that the government's role in the matter must be kept a secret as long as possible.

Lasky convinced his associates to agree to the terms. In doing so, he went out on a shaky limb, as it was made clear to him that he would be held



Mechanic El Brendel and fresh pilots Richard Arlen and Buddy Rogers at the flight line.



The youthful "ace" returns from his first kill.

responsible for the success or failure of the project. There were several men in high places who hoped Lasky would fail.

Lasky placed the production in the hands of B.P. Schulberg, head of the Paramount West Coast Studios in Hollywood (much of the Paramount program was still being produced at the Paramount Astoria Studio on Long Island). Lucien Hubbard, a veteran writer, director and production supervisor, was named as line producer. Paramount decided to take a gamble on a young and not very experienced director, William A. Wellman, because he showed promise and had the hard-boiled personality such a project would demand – but mostly because he had been a fighter pilot in the Lafayette Flying Corps during the war. This was a volunteer group of Americans who flew for the French forces before America entered the conflict.

About six months were required to get a script ready, cast the roles and assign the crew. By then preparations were being made in Texas and the Army showed every intention of making *Wings* what

it later was called, "the *Big Parade* of the air." Pilots arrived from Crissy Field, California, from Langley Field, Virginia and Selfridge Field, Michigan, and smaller stations. Scott Field, Illinois, supplied balloon officers, crews and material. Troops, tanks, artillery, explosives and miles of barbed wire arrived from Fort Sam Houston, Texas. All were assembled at Old Camp Stanley and Kelly Field.

Casting of the leading roles was restricted largely to the Paramount contract players. Richard Arlen was a natural choice, as he had been a combat flier in the Canadian RFC. Charles "Buddy" Rogers was young and anxious to learn to fly. Clara Bow, the much-publicized "*It Girl*," was an ideal romantic lead and had a strong audience following. The character parts were assigned to some first-rate actors, including H.B. Walthall, Louise Closser Hale and Richard Tucker.

A lanky contract player from Montana, Gary Cooper, who was doing pretty well in Westerns, was given the small role of a doomed cadet who appears in one sequence. Wellman's friend, director-cameraman Ernest B. Schoedsack, suggested that Cooper should trade roles with one of the leading men. As it turned out, Cooper's few moments on the screen made such an impression that it helped his career enormously.

The screenplay centers upon two small town youths, Jack Powell (Buddy Rogers) and David Armstrong (Richard Arlen), who both love the same girl, Sylvia Lewis (Jobyna Ralston). The rivals join the Army Air Corps after America enters World War I and go through basic training together. After a bitter fight, they become friends. Flying with the Dawn Patrol in France, they bring down a German war plane

and as a reward, are given leave in Paris. They encounter Mary Preston (Clara Bow), a tomboyish beauty from their hometown who is now an ambulance driver in the war zone. All leaves are cancelled due to an emergency at the front, but Jack is too drunk to go. Mary sees to it that he gets back, but so compromises her reputation in doing so that she is discharged.

David is shot down behind the enemy lines and is presumed dead. Actually, he has fallen into German hands and is in prison. Jack flies out alone, determined to avenge his friend. Meantime, David escapes and steals a German plane. Jack shoots the plane down and it crashes into a French farm house. Landing, Jack finds that he has killed his best friend. The embittered hero returns home and marries Mary.

Obviously, the story is a serviceable combination of romance, humor, derring-do and tragedy. It was not sufficient in itself to set the picture apart from the average war melodrama. Nor was it a "star" vehicle, although the lively and youthful leads were popular and dependable. It would be the airplanes and the skies that would capture the hearts of the audience of a time long before airline travel became commonplace. Only a handful of viewers out of the millions who would see the picture had even been in an airplane or would know what it was like to fly among the clouds instead of seeing them from the ground, or to see the shadow of their plane racing over the undulating earth far below. There had been a few aerial pictures on the screen before, most of them stunt films with ace pilots such as Ormer Locklear, Al Wilson, Dick Grace, Charles Nungesser and others. Nothing approaching the scale of *Wings* had been attempted.

It was evident that such a picture would require highly unusual photographic treatment. Wisely, Hubbard and Wellman agreed upon Harry Perry, ASC, as their director of photography. A veteran cinematographer who had begun his career with Famous Players-Lasky, a parent company of Paramount, Perry was equally at ease with hard-bitten melodramas, Westerns, and the most silken romantic yarns. Of equal importance, he was also a master Akeley cameraman. (Perry, born in 1888, died February 9, 1985).

The Akeley (popularly called "pancake camera") was invented in 1915 by the great naturalist, Carl E. Akeley, specifically to photograph African wildlife. The cylindrical, all-metal body was mounted on a gyroscopic system so that it could be panned and tilted rapidly and smoothly in all directions. The focal plane shutter with 230° opening was designed to minimize the blurring common to fast panning shots. Framing and focusing of the long-focus lens was done with an identical viewing lens. All of these features were revolutionary at the time and the demand for Akeleys by professional cinematographers outpaced what the manufacturer could produce. Not only was the camera favored for expeditionary and wildlife photography, but it became popular for filming outdoor action scenes in Westerns, war pictures

Clara Bow does her bit for the boys "over there."



and the increasingly popular airplane melodramas.

"I was engaged for this picture about two months before actual production started because of my experience in aerial photography and so that I could have time to work out the mechanics necessary to get the effects called for in the script," Harry Perry said.

"Many of these at first sight seemed impossible and I spent days figuring out mounts for cameras to be put in every possible and impossible place on an airplane and in making tests and working out electrical devices so that they could be operated by the pilot or actor in the air; also mounts for cameras of several different makes to be used on different types of airplanes by cameramen themselves.

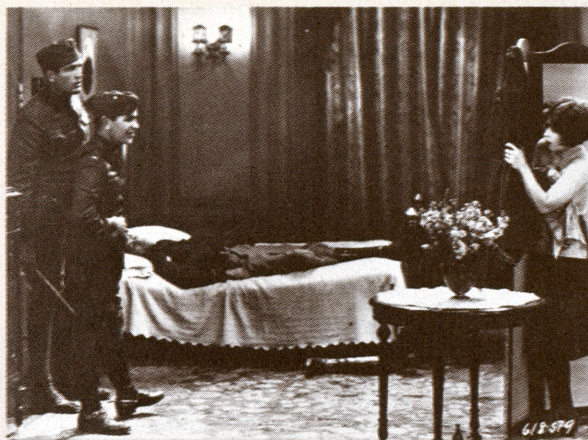
"I also went to Texas twice before the start of production to make tests in the air and help select locations. While on the picture I personally supervised over 200 motor driven cameras on airplanes, working out the exposures and filters used on each shot before it went into the air and, besides this, the other cinematographers and myself had nearly 300 hours of actual work in the air which involved the hardest kind of work and quite a few escapes from serious accidents – which meant no thought for personal safety."

Lt. Cdr. Harry Reynolds and Capt. Bill Taylor assisted Perry in preparing mounts and riggings. Most ingenious was the adaptation of a machine gun ring mount so that it surrounded the cockpit of an aircraft. With the camera mounted on the ring, it was possible to swing it around freely.

Perry assembled as many good cameramen as he could find as they were needed. His key associates were Paul Perry, ASC, his older brother, a long time director of photography and former chief special effects cinematographer at Universal; E. Burton Steene, a veteran pilot, newsreel cameraman and Akeley specialist; Faxon M. Dean, ASC, who began as a Pathé News cameraman in 1912, was a leading cinematographer at Universal and Paramount, and had survived a plane crash while serving as a combat cameraman during the war; and Alfred "Buddy" Williams, a hard-drinking young action photographer.

A large number of operators and assistant cameramen worked on the picture. Among them were two youngsters who would become famous in coming years: Russell Harlan and L. B. "Bill" Abbott. Several well known first cameramen were pressed into service during production, including Bert Baldridge of Paramount, Herman Schoop, and a prolific photographer of Westerns, Frank Cotner.

An incredible number of cameras were used in the air and on the ground for the re-staging of the drive on St. Mihiel. These included studio model Mitchells and Bell & Howells, B & H Eyemo spring-driven newsreel cameras, DeVrys, and the hand-cranked Akeleys. Most were specially adapted to be battery powered.



Military police catch Buddy Rogers and Clara Bow in an embarrassing situation.



A beautiful glass shot transforms a Texas road into a French battlefield.

One of the most memorable sequences is one in which Kellerman, the leader of the German squadron, is shot down in flames. The actor in the role has often been mistaken for Jack Holt, star of many Paramount pictures of the Twenties, doing a "cameo" role. Actually, he is Frank Clarke, a famed stunt pilot, who – in helmet, goggles and pencil moustache – is a ringer for Holt. The character has been established as a ruthless killer in earlier scenes, grinning evilly as he guns down the youthful and inexperienced American pilots. His death scene is the most triumphant moment of the film.

In medium close up (as seen from in front of the cockpit), Clarke reacts as though struck by bullets. As smoke pours into the scene as from a flaming engine, blood gushes from Clarke's mouth. From the changing sky behind him it is evident that the plane has gone into a rapidly accelerating spin. This excruciating shot remains on screen for a long time, interacting with aerial shots of the plane spiraling down in flames.

The close shot of the dying pilot was made from a battery driven Mitchell activated by Clarke himself. He also released the gate on a box of lampblack to simulate the wind-blown smoke. The loop-over and tailspin were real, filmed while Clarke put the craft into an out-of-control spin from 6,000 feet. His colleagues were astonished that he was able



The drive on San Mihiel—reenacted in San Antonio.

to play dead while his craft hurtled toward destruction.

The scene could have been done similarly in the studio using one of the composite techniques of the day, such as the Williams or Dunning processes, as was done in some later films. However, the realism of the scene as filmed is beyond question and its impact is still enormous.

The long shots of the hurtling craft were enhanced by the addition of flames touched in directly on the negative by hand, frame by frame. This method was also used on some of the other crash scenes.

Incidentally, Clarke and another equally famed stunt pilot in the *Wings* company were deadly enemies. L.B. Abbott recalls the day he was strolling with Clarke when they noticed the other pilot standing next to the rudder of Clarke's plane. "Frank walked over and said, 'What the hell are you doing to my plane?' (The man) mumbled, 'Aw, just looking around,' and ambled away. Frank examined the wires and said, 'Look what that sonfabitch did!' I could see that he had unscrewed the turnbuckles on the control wires so that they were held by only one or two turns! It would have been suicide to have flown that plane."

Another great stunt pilot who also played a role was Dick Grace. As one of the American fliers, he flinches when a French general decorates him and kisses him on both cheeks. Grace is probably the most famous of the movie fliers because he wrote books and magazine articles about his adventures. One, *The Lost Squadron*, was filmed by RKO-Radio in 1932, with Grace and Clarke doing most of the stunt flying. One of his specialties was deliberately crashing planes without killing himself (one of his books was titled "I'm Still Alive"). In one of the crashes he staged for *Wings*, he was supposed to nose a plane over onto its back. Coming in at too acute an angle, the plane dug in and Grace's neck was broken. He received \$500 for the job and was put in a San Antonio hospital, where he was supposed to remain for one year. After six weeks he broke the cast with a hammer, climbed through a window and went to a dance at a downtown hotel.

The aircraft used in *Wings* were not always what they appeared to be. Most of the Spads actually were Thomas-Morse Scouts. The huge German Gotha Bomber was impersonated by a postwar model Martin bomber. Curtiss P-1s doubled as Fokkers. Although a term of the Versailles treaty decreed that all Fokkers would be destroyed, it is believed that Dick Grace crashed a genuine Fokker for one scene.

The ground warfare scenes in the St. Mihiel action are equally impressive. It was staged on a grassy plain of about five square miles on the Camp Stanley army reservation – or, at least, it was that before field guns bombarded it with live ammunition. The trench system of the French battle site was reproduced under the direction of Captain E.P. Ketchum, Second Division Engineers. A telephone network set up by Captain Walter Ellis, of the Second Signal Company, covered the entire area. Captain Robert Mortimer, Second Ordnance Company, planned and supervised the use of all explosives. The men of the Second Division – which had been in the actual San Mihiel campaign – worked with a small army of local laborers to prepare the trenches, shell holes, blasted trees and ruins. From the ground or from the air the battlefield was horrifyingly convincing. The cost was about \$300,000.

Harry Perry shot some test films from low altitudes to determine how the terrain would register on film. The movement was too rapid to allow the camera to pick up details. High camera angles were a necessity, so a camera tower resembling a giant oil derrick was built. It was 100 feet high with platforms every 25 feet. Cameras were set up on all platforms. Men with Eyemos were concealed in the battlefield behind props and in covered pits. Twenty-one cameramen were utilized to photograph the drive.

Some \$16 million in government equipment was deployed for the sequence, consisting of aircraft, tanks, artillery, trucks and field gear. Each day's operations were planned with minute care; to do otherwise would have resulted in chaos and probable casualties. Major A.M. Jones of the Second Division's General Staff directed the tactical operations of the troops. The officers with Wellman and Hubbard worked out details of each day's action with field maps and blueprints and relayed them to sub-officers and squad leaders. The soldiers who were to be "killed" were chosen and "died" according to a timetable.

The army planes were piloted by members of the First Pursuit Group under the supervision of Brigadier General F.P. Lahm, commandant, and Major F.M. Andrews. Real bombs were dropped from low altitudes, usually much lower than would have been the case in actual combat, in order to get the aircraft into the frame with the ground action. About 5,000 men participated in Paramount's version of the drive. The greatest number of fighter craft that can be counted in any one shot is 18, a small fraction of the 1,500 planes that participated in the actual drive, but the impression of a huge air armada is achieved.

E. Burton Steene described his experience while photographing from the bomber in *American Cinematographer*, December, 1926:

"Akeley cameras are always given the most difficult 'setups' when anything big is to be done. Not content with airplanes and balloons being crashed to earth, a whole French village is wiped out by bombs released from a giant Martin bomber, painted and revamped to simulate an enormous Gotha bomber. Chief cinematographer Harry Perry . . . assigned me and my Akeley to the bomb compartment containing 12 100-pound bombs of T.N.T. I was hoisted and squeezed in the remaining space in the 'bombay' as the bomb compartment is called. My camera was mounted in such a position that it was shooting straight down . . . We made several practice flights and dropped dummy bombs over the village to get the range. I soon found that the parachute pack was too cumbersome and interfered with the proper handling of my camera. I then was forced to secure a model of a 'chute that hung on the front, instead of the back; this gave me a trifle more room, as I was shooting from a kneeling position, at an altitude of less than 600 feet.

"In addition to my Akeley, I had three Eyemo automatic cameras shooting down, one operated by Al Lane, an assistant, and the other two by an electrical device . . . Everything seemed safe and snug perhaps to those on the ground but with 1200 pounds of T.N.T. six inches away in a space so small that I could scarcely move my legs in my kneeling position, suppose something went wrong and we had to make a forced landing or perhaps crash with the 12 100-pound missiles, primed to go off on contact!

"Captain S.R. Stribling was pilot. Twice we circled the village, convoyed to two Fokker ships, while two Martin bombers and three smaller planes were at an altitude of about 1200 feet with cameras mounted on them to show the three invading planes below bombing the village.

"Harry Perry, Faxon Dean and Paul Perry . . . covered these shots from the bombers above . . .

"On the first two trips Captain Stribling dropped a dud to get the range. A thin rope was fastened to my left arm which led to Captain Stribling's cockpit through the interior of the bomber . . . A signal of two sharp pulls was the word to tell me the bombs would be released within 15 seconds and to start cranking. I could see nothing fore or aft, only a hole in the 'bombay' directly in front of me, two by four feet. I could not see what was coming, hence the signal. Naturally the scene would be a short one as the ship was doing 90 miles and I must get the explosions of all the bombs as they hit the village.

"By this time, I was so interested in making a successful shot that I forgot all about the T.N.T. and everything going on. I had to keep my eye glued to the finder eyepiece – the slightest jar would knock my eye away from it and a foot or two of film lost was

not to be considered. Captain Stribling gave the two yanks . . . Looking through the finder, it was my job to grind and pick up the bombs as they dropped an inch or two from my cranking arm, keep them in the center of the picture until each one exploded. There was dynamite planted in the village to augment the explosions. Down they went, all in a row; they slipped out of the compartment like grease for I did not hear or see them until I picked them up in my finder.

"It was a wonderful sight to see these death-dealing messengers speeding down – the terrible explosions took place right on schedule, due to the unerring eye and hand of Captain Stribling.

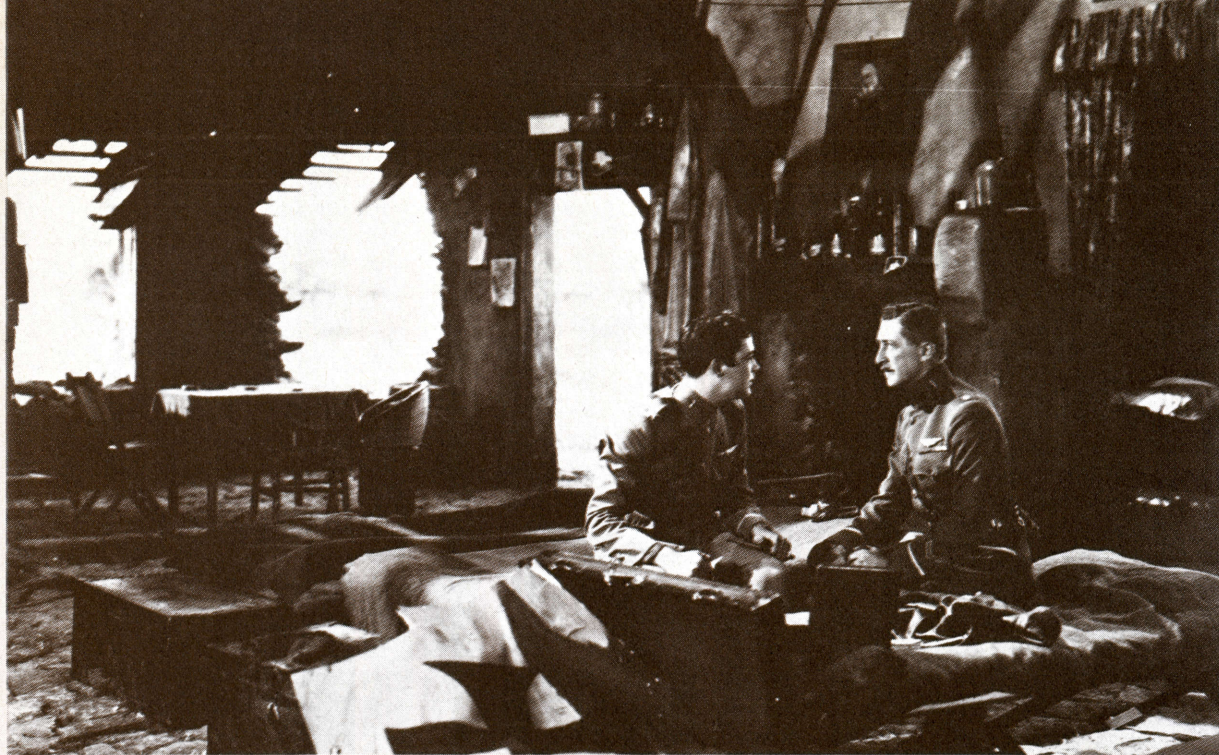
"I do not know how far the concussion lifted the ship, but for several seconds it shook and trembled with each explosion until I thought it might possibly be out of control, which of course it was not. The sensation of being rocked and thrown about in the air in a giant bomber a scant 600 feet above the ground while dropping 1200 pounds of T.N.T. is a thrill not often given to a man. In my cramped quarters it would have been very difficult if not impossible to get away with my parachute, but my confidence in the pilot kept me in repose.

"The village was totally wrecked by this German invader and the scene was a great success and will be incorporated in the picture . . . along with the thrilling shots of the three ships, bomber and two escorts, from above . . . It took about an hour to do the stunt. I was confined so tightly in my cramped quarters that I had to be lifted out as my legs were totally numb below the knees."

Faxon Dean and "Buddy" Williams had thrills of quite another kind while shooting at 11,000 feet from a bomber piloted by Lieutenant E.H. Robinson. One of the motors quit due to extreme

*Buddy Rogers—
backgrounded by
cemetery crosses—
realizes he has shot
down his best
friend.*





The flight commander, Richard Tucker, tries to console the heartbroken pilot.

cold, dropping the plane into the heart of a cumulus storm cloud. Buffeted by violent convectional currents, the ship was thrown out of control and the pilot's goggles were covered with ice and frozen fast to his face.

"I knew we were over a mountainous part of the country and that the hilltops would be 1,500 feet higher than the field from which we had taken off," Robinson wrote in *American Cinematographer* for January, 1927. "When we had descended 9,000 feet and still I could not see the ground, I called to the cameramen and told them that if ground was not sighted within another 1,000 feet we were going to jump . . . But another 1,000 feet we broke through the clouds and sighted the ground just 800 feet below us. A hurried look served to show me that we had been very fortunate in coming out in the center of a valley, which was entirely surrounded by high hills disappearing into the clouds. In other words, a mile and one-half in any other direction would have unquestionably seen us crashed into a mountain.

"I picked a likely looking field, glided for it – approaching it 'into the wind' – and made a good landing without injuring anything or anybody."

Things did not turn out as well for at least one army pilot. Hubbard and Wellman saw one of the planes crash during the St. Mihiel sequence. The field operations officer told them to think nothing of it, as pilots often were killed during training, and that it would never be heard of. Buddy Rogers believes there were three fatal crashes during production, all involving military pilots.

During the six months of shooting in Texas, Wellman and Hubbard spent much of their time arranging entertainments for the troops to quell their impatience with the vagaries of motion picture staging, settling disputes between the air and ground

branches, soothing the outrage of some of the army brass at Paramount's disruption of their routine operations, and trying to cope with government politics.

The company returned to Hollywood to film interiors and begin post-production work. Roy Pomeroy, chief of special effects, and Paul Perry took charge of miniatures and composites, which are so well done and smoothly integrated as to be virtually undetectable.

Some of the scenes in which flying was not involved are almost as memorable as the aerial work. Wellman and Perry conceived a shot wherein the camera, on a specially made boom, sweeps through a French night club to "discover" the principals. Wellman disliked the scene because he felt it was "dizzying for the audience" and swore never to do it again. It's really quite a beautiful scene.

Backlighting is used to fine effect in glamorizing the French girls and, especially, in a scene in which Clara Bow emerges from behind a clothesline full of underclothes. Especially memorable is the scene at the crash in which Arlen dies; Rogers alights from his plane backgrounded by rows of white cemetery crosses and framed by the ruins and wreckage in the foreground.

Wellman went to great lengths in behalf of realism in certain parts. Rogers remembers that for the champagne drinking scenes, Wellman made him actually get drunk. The special effects department added hallucinatory bubbles to show what Rogers *thought* he was seeing. Before the flight sequence between Arlen and Rogers, Wellman secretly informed each actor that the other was angry at him and that each had said he was going to "beat the hell" out of the other.

On the other hand, he took no heed of some glaring anachronisms, such as cars, airplanes and fashions that suggest 1926 rather than 1919. As Wellman expected, few patrons noticed.

In the program book for *Wings*, John Monk Saunders, who died by his own hand several years later, wrote:

"A year and a half after the genesis of the piece in the Lasky library, after the books of the production had been closed, after the oil and the high-test gasoline and ordnance had been paid for, after the planes had been reconditioned and the War Department had been indemnified for every bit of government property lost, damaged or destroyed in the filming of the story, *Wings* was completed.

"The result is a slender strip of negative 12,000 feet in length. It can be seen in two hours and a half. But that film will, in the next five years, penetrate the farthest corners of the earth; its subtitles will be translated into 48 languages, it will be viewed by countless numbers of people."

Wings did not reach the general public for a long time. It was premiered first in 14 reels at San Antonio in the Spring of 1927. It put the city in a state of high excitement and its wide acceptance seemed assured. Several months passed while the film was re-edited to 12 reels totalling 12,600 feet, a running time of 140 minutes on the new sound equipment being installed at the larger theaters. J.S. Zamecnik composed a complete musical accompaniment scored for concert orchestra and wrote the then-inevitable "title song" with lyrics by Ballard MacDonald. Release prints were hand colored, so that skies were blue, machine guns spat red and airplanes spiraled toward the ground belching red flames.

When *Wings* finally began its 12-week premiere engagement in New York City's Criterion Theater on August 12, a special projection system called Magnascope was used, reportedly to great effect. The process required a huge screen and an extra projector equipped with a wide-angle lens which had been invented by Lorenzo del Riccio for projecting giant images outdoors. A Paramount advertising executive, Glendon Allvine, conceived the notion of using Magnascope to enlarge special sequences of big films, and it was introduced at the New York premiere of *Old Ironsides* (1926) for the sea battle at Tripoli. The following year it was even more effective when applied to the elephant stampede of *Chang*, which was further enhanced by the booming of two thunder drums from behind the screen. This technique was expanded for *Wings*, in which more than half of the film was shown on the oversized screen (four times normal size) and sound effects recordings played behind the screen provided roars, whines, gunfire, crashes and explosions to accompany the screened images. The movie was shown in two parts, the first running 65 minutes and the second 74 minutes. The Magnascope images commenced with the first dogfight, about 35 minutes after the opening and continued until intermission. The second part opened on

the normal-size screen and expanded onto the enlarged screen for the drive on St. Mihiel and the climatic flying scenes.

After several months the picture was shortened to 12,267 feet and an RCA sound track was added, incorporating the score and sound effects but without dialogue. This version and a silent edition at last were put into national release on January 5, 1929, almost two years after the premiere. Despite the "talkie craze" that permeated the movie-going public at the time and doomed most non-dialogue pictures to oblivion, *Wings* was a big hit everywhere.

On May 16, 1929, the Academy of Motion Picture Arts and Sciences held its second anniversary banquet in the Blossom Room of the Hollywood Roosevelt Hotel. At this time the first Academy Awards were given. *Wings* was voted the Best Picture Award for 1927/28, and Roy Pomeroy received the first and only Engineering Effects Award for *Wings*, having "rendered the best achievement in producing effects of whatever character obtained by engineering or mechanical means." The category was discontinued after the first year and there were no awards given for special effects until 1938.

It can be added that, after nearly six decades, *Wings* retains its power to captivate an audience. ■

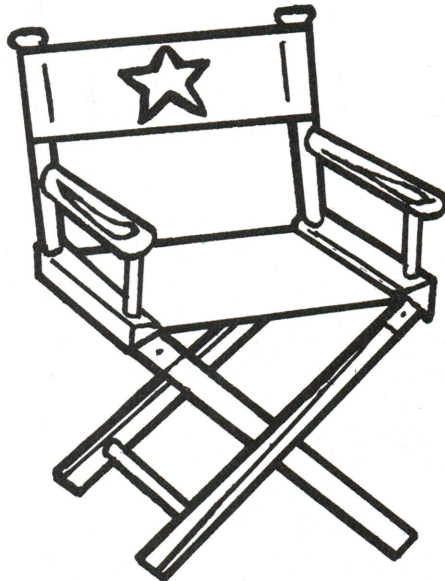
Credits and Cast

Adolph Zukor and Jesse L. Lasky present WINGS; a Lucien Hubbard production; directed by William A. Wellman; story by John Monk Saunders; adapted by Hope Loring and Louis D. Lighton; titles by Julian Johnson; editor in chief, E. Lloyd Sheldon; photographed by Harry Perry, ASC; engineering effects, Roy Pomeroy, ASC; B.P. Schulberg, associate producer. Unbilled credits: additional photography by J. Burton Steene, ASC; Paul Perry, ASC; Alfred Williams, Russell Harlan, Bert Baldridge, L.B. Abbott, Cliff Blackston; Faxon M. Dean, ASC; Frank Cotner, Herman Schoop, L. Guy Wilky, Al Lane, Ray Olsen; photographic effects, Paul Perry; assistant director, Norman Z. McLeod; flying sequences supervised by S.C. Campbell, Ted Parson, Carl von Hartmann, James A. Healy, Capt. Bill Taylor, Lt. Cdr. Harry Reynolds; supervisor of troop maneuvers, Maj. A.M. Jones; ordnance supervision, Capt. Robert Mortimer; communications officer, Capt. Walter Ellis; technical supervisor of ground operations, Capt. E.P. Ketchum; still photography, Otto Dyer; musical score by J.S. Zamecnik; title song by Zamecnik and Ballard MacDonald; New York opening August 12, 1927, running time 140 minutes; national release January 5, 1929, running time 136 minutes; sound version recorded by RCA system.

A Paramount Picture

Mary Preston, Clara Bow; Jack Powell, Charles (Buddy) Rogers; David Armstrong, Richard Arlen; Sylvia Lewis, Jobyna Ralston; Cadet White, Gary Cooper; Celeste, Arlette Marchal; Patrick O'Brien, El Brendel; The Sergeant, Gunboat Smith; Air Commander, Richard Tucker; Mrs. Armstrong, Julia Swayne Gordon; Mr. Armstrong, Henry B. Walthall; Mr. Powell, George Irving; Mrs. Powell, Hedda Hopper; French Peasant, Nigel de Brulier; Kapitan Kellerman, Frank Clarke; Pilots, Dick Grace, Rod Rogers, Paul Mantz, Hoyt Vandenberg, Frank Andrews, Clarence Irvine, Earl E. Partridge, S.R. Stribling, E.H. Robinson. Dedication: To those young warriors of the sky, whose wings are forever folded about them, this picture is reverently dedicated.

YOU'RE THE CREATIVE GENIUS!



We do all the rest:

- ARRI 35BL III • BL II
- ARRI 35 III (HS) • ARRI IIC
- ARRI SR • SR Highspeed
- VIDEO ASSIST on all ARRI cameras
- Lenses—COOKE • ZEISS (Highspeed)
 - ANGÉNIEUX • CANON Telephoto
- Air Conditioned Sound Stage (3-walled coved cyc)
- Tungsten • HMI Lighting
- Grip Trucks • Grip Equipment
- Video—Single and Multiple Pkgs
- Sachtler • Ronford • O'Connor Worrall Heads

"YOUR ONE-STOP RENTAL FACILITY"

CALL NOW!



**1 (800) 621-0849
Ext. 498**

(213) 464-6200

948 N. Cahuenga Blvd. • Hollywood, CA 90038

Richard Patterson

Photographing

Robert Kennedy and His Times

When Michael D. Margulies, ASC, learned that Bob Christiansen and Rick Rosenberg were producing a seven hour miniseries for CBS on Robert Kennedy, he knew that it was a project with which he could identify very strongly. He had been personally involved in the presidential primary in 1968 and had photographed Kennedy a few weeks before his assassination. Margulies had worked as a camera operator on Haskell Wexler's *Medium Cool* and had worked on a USIA film about the elections in 1964. He felt familiar with the political world in which Kennedy had moved and he wanted very much to be a part of a film that would tell Kennedy's story.

He insisted that his agent get him an interview with the producers and with Marvin Chomsky, the director. Margulies had worked with Christiansen and Rosenberg before, but never with Chomsky. His credits include a long list of television productions and several features. Among his television credits are *Fallen Angels*, *The Amazing Mr. Hughes*, *The Blue Knight* and *The Law*. His feature credits include *Dirty Mary*, *Crazy Larry*, *Six Weeks*, *My Bodyguard* and *Police Academy*. The combination of his credits and his enthusiasm for the project landed him the job, and Chomsky presented him with what he describes as "the biggest script I've ever read." It was well over 300 pages and chronicled Kennedy's life from World War II to his funeral. (Subsequent editing of the production eliminated scenes prior to 1946.)



Understandably Margulies' primary concerns on reading the script were technical and logistical. He had three weeks to prepare and the production had a 65-day shooting schedule starting in November 1983. The script called for a variety of seasons and the schedule included two weeks in Massachusetts and one week in Washington, D.C. There was also a sustained sequence to be shot on a train and a liberal use of practical television sets in scenes. Some scenes were structured around intercutting between televised events and characters watching them on TV sets or monitors. Many scenes or settings in the script were re-creations of things which are firmly planted in the consciousness of every American,

and live action footage would have to be intercut with documentary footage of the actual events.

Some of Margulies' questions were answered in the preliminary pre-production meetings. Other concerns simply had to be dealt with as they arose in the course of production. The train sequence was to be shot on a few miles of private rail in Oxnard, California. This meant that it would be easier to control, but it also meant that a few miles of countryside would have to stand in for the entire U.S.A. as the campaign train crosses the country. The congressional hearings which Margulies assumed would be shot in an actual location were to be shot in a three wall set at Burbank,

Brad Davis as Robert Kennedy and Veronica Cartwright as Ethel at the rally just prior to the assassination.

Michael D. Margulies, ASC, Joseph Steuben, John Abbene and Marc Margulies on location.



thereby greatly facilitating the lighting and the handling of the video aspects. The congressional hearings themselves were to be shot purely with video cameras and fed live to monitors in the set where a scene was being filmed.

Chomsky's background in live television enabled him to simultaneously direct the three-camera video coverage of the staged hearings and the filmed scene in which the actors watch the hearings on TV. Other scenes were videotaped for playback on monitors at a different time.

No one could insure that the weather would accommodate the needs of the script, but a contingency plan was developed for winter exterior scenes if there was no snow. As it turned out the weather cooperated remarkably. During the two weeks in Massachusetts there was rain, snow and sunshine. The snow fell for three days enabling the winter scenes to match and then the sun came out, melted the snow and the company was able to shoot spring or summer scenes with green grass. A scene in which Kennedy works on a sailboat on the

beach at Hyannis Port looked like summer even though the actors were freezing.

The schedule called for an average of five pages a day. Although he is accustomed to shooting as many as six or eight pages a day on television movies, they are generally nowhere near as ambitious as this project. The difference in shooting time is generally a function of the degree of attention to detail in all phases of the production and the amount of time devoted to shooting coverage. With the style Chomsky and Margulies adopted for *Robert Kennedy and His Times* it was possible to complete the photography three days under schedule without compromising the visuals.

The key term in the concept for the visual style of the production was authenticity. Because of the nature of the story and because the public was so familiar with many of the events and settings involved, it was felt that authenticity was crucial. This meant not only that the set, for instance, of the Capitol building hallways had to be dressed with appropriate art work, but also that the lighting

style be realistic. To Margulies "realistic" means primarily soft source lighting with an absence of "movie shadows," i.e. shadows which are not justified by sources within the scene. He also distinguishes between a realistic style and the approach taken with a "fantasy" where the primary concern would be to light the actors regardless of considerations about the source. Everyone agreed at the outset of *Robert Kennedy and His Times* that the subject did not call for "fancy," "flashy," "slick" or "arty" photography. It would be inappropriate for the visual style of the film to call attention to itself or in anyway distract the viewer from his involvement with the events and characters being depicted.

At least some portion of the story was to be told by means of documentary footage. A great deal of research was done to gather available stock footage or videotape both for possible inclusion in the show and also for reference in designing the staged sequences. Still photos were also

used as a guide in designing sequences such as the scene in which Robert Kennedy speaks at the University of Santiago. In many instances the look of news footage was duplicated by using a single sun-gun and a hand-held camera on the studio stage. News photos of the congressional hearings revealed a bank of lights set up for news cameramen, and Margulies was able to use a similar bank of lights on the stage.

Documentary footage was integrated into the production for three principal sequences: Martin Luther King's speech, the demonstrations and Kennedy's funeral. The footage was either used straight or played back on a TV set in a scene involving the actors. Synchronization with the video playback was achieved by means of the Panavision Video/Film synchronizer and was never a problem for Margulies.

Margulies was fortunate to be able to use his customary crew. Joseph Steuben was his operator, John Abbene, the first assistant and his son, Marc Margulies, the second assistant. Cal Maehl was his gaffer and Don Duffield, the key grip. Steuben has his own rig for hand-holding the Panaflex, and can shoot hand-held with a 1000' magazine on the camera.

Margulies also had everything he needed and in fact was able to dispense with the crane which had been budgeted because Chomsky said at the outset that there would never be any use for a crane shot in his approach to the staging. Chomsky also said he would never use a zoom in a shot, but Margulies used a zoom lens to facilitate composition. Any movement or change in framing was accomplished by moving the camera rather than zooming, and Margulies had occasion to use every bit of the 200 feet of dolly track in the grip package. One scene on Boston Commons in which Robert (Brad Davis) and Ethel (Veronica Cartwright) walk and talk was staged around a 200 foot dolly. A nine light for fill on their

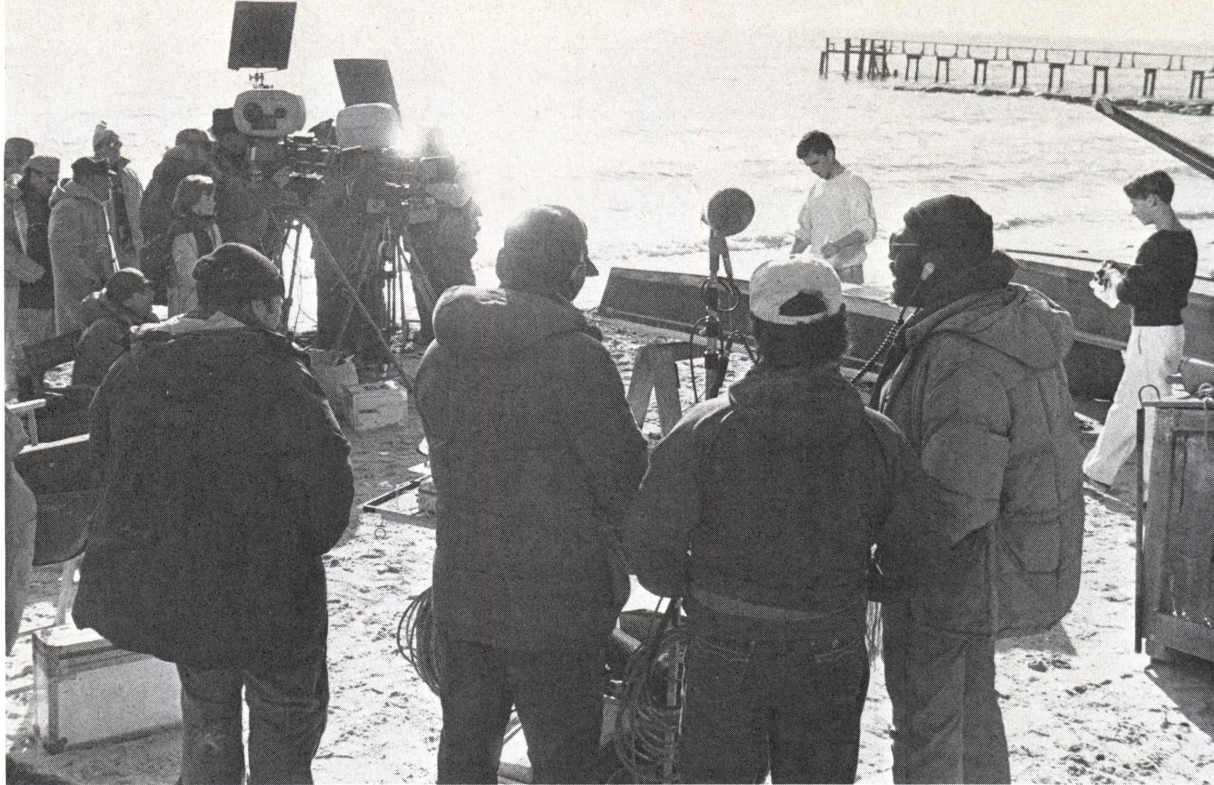


Above: Shooting the 200 foot dolly shot on Boston Commons. **Left:** Director Marvin J. Chomsky and camera operator Steuben with his custom rig permitting him to handhold the camera with a 1000-ft magazine. Abbene pulls focus by means of an extension.

faces was mounted on a Western dolly and pulled parallel to the dolly track. The same tracks were used for the reverse angle by simply cheating the actors to the other side of the dolly track. The shot, like most of the exterior scenes, was staged to permit natural backlighting which was supplemented with only enough soft fill light to bring up the shadows on the actors' faces. Margulies believes that natural backlighting is not only the most attractive way to shoot an exterior scene but

keeps the actors from having to squint. Like most cinematographers Margulies knows that an actor's eyes are often the most important element in an image.

Another piece of equipment Margulies finds particularly useful is a scissors lift, a piece of construction equipment which can usually be rented on location. He uses a scissors lift to put lights up high for backlighting in night photography or when shooting rain. A scissors lift is a hydraulic lift with a platform that can go up



On the beach at Hyannis Port shooting a summer scene in mid-winter.

to 50 or 60 feet and it can be driven around like a fork lift. Margulies would put an arc or HMI light or a variety of lights on the platform and station an electrician with a walkie talkie with the lights. Normally high back lights might have to be put on parallels or on top of a truck. Using a scissors lift instead greatly improves the efficiency of lighting setups. It can provide a moonlight effect over a large area or backlighting on buildings and streets.

Margulies' basic approach to lighting is to begin with an overall ambient top-light and then add the effects of light sources in the scene. He observes that different cinematographers will take different approaches to lighting the same scene. Some may light the background first and work forward to the actors; others will light the actors first and move towards the background. His first concerns are with the actors rather than the background except that he starts with an overall ambient light level which in the case of a day scene might be just enough to get an image on film. To illustrate his approach he cited two examples: the hotel room on location at

the Ambassador Hotel in Los Angeles and the set for the Oval Office on the stage at the Burbank Studios.

The hotel room in the Ambassador Hotel had ceilings which were high enough to permit Margulies to rig small units on wall spreaders to provide the overall ambient light. In a situation like this he may just use bare photo-flood bulbs with #216 tracing paper draped around them for diffusion. He likes the texture of 216 tracing paper as a diffusion material and finds it very easy to work with. It can be taped or stapled or hung in front of a lamp. It cuts down the light by about the same amount as a double scrim but gives it a nice soft quality similar to the effect of spun glass. In the hotel room he had four photo-flood bulbs rigged to the ceiling, one over each door and two in the center of the room. They created a light level which was almost enough to expose the film by and lit a lot of the walls. The top light could also provide a highlight on the actor's hair or even a bit on the shoulders depending on the shot.

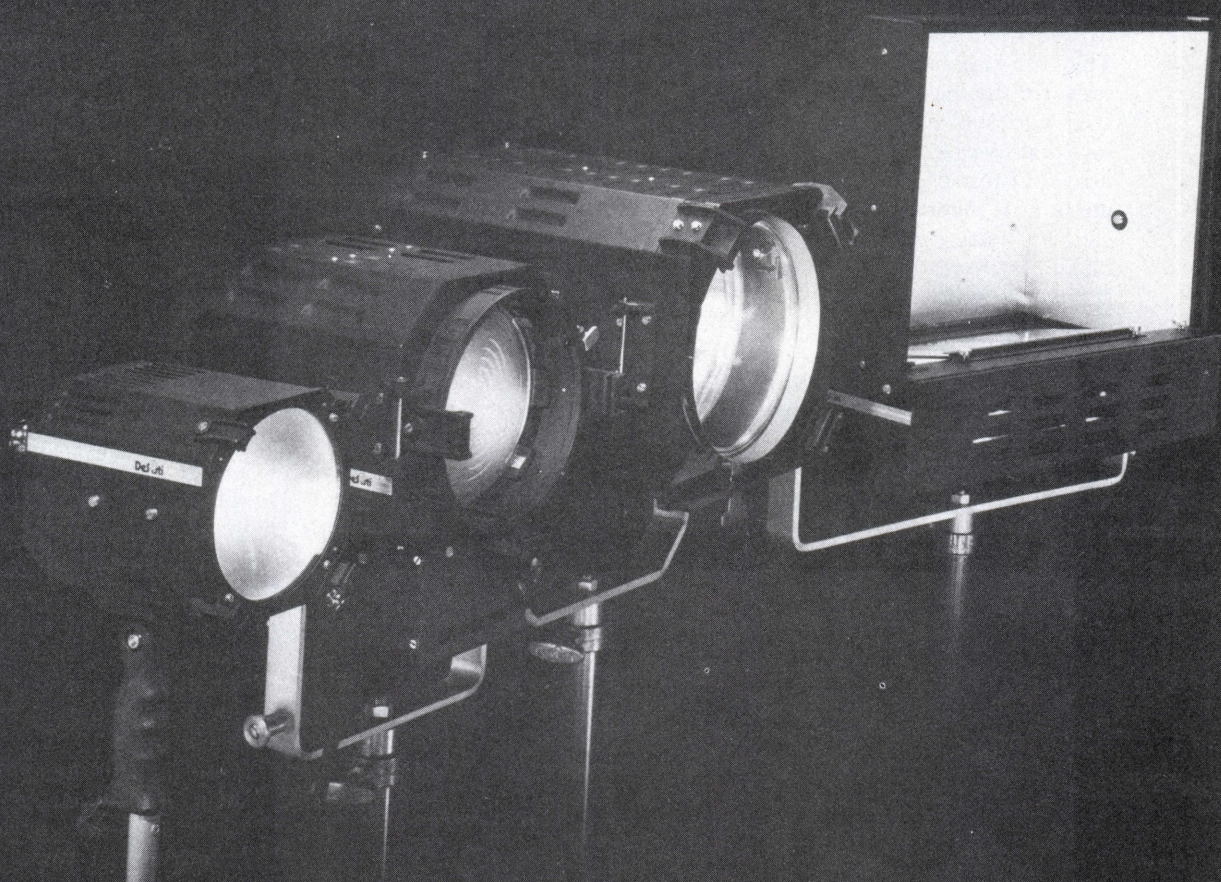
The actor's face was lit from the source. In this case the source was a combination of the large windows and the practical

lamps in the room. Ideally, light coming through the windows would be supplemented with units placed outside, but the fact that this hotel room was on the fifth floor made lighting through the windows impossible. Instead Margulies had a 1200W or 750W HMI light hung above the window without being in the shot. This light was also diffused with 216 tracing paper.

As a rule, Margulies prefers soft light, which he feels is more realistic than hard light because most natural light or light from practical lamps is soft. Obviously if the light source in a scene is a hard source and a dramatic effect is called for, Margulies will use a hard light to create the effect, but he relies basically on soft light. He prefers if possible to use bounce light when he can get enough coverage bouncing light off a piece of foamcore or a white card. This is especially true of closeups of actresses where he feels the added softness of bounce light is particularly flattering. If the shot is too wide or it is not feasible to bounce the light, he will use diffused projected light. The only time he is likely to use hard light is in lighting some portion of the set

Deserti

LIGHTING



TIZIANO

200 WATT DISCHARGE SUNGUN
2500 WATT DISCHARGE OPEN FACE

LEONARDO

1K, 2K, 5K FRESNELS
STUDIO OR LOCATION

CARAVAGGIO

1200 WATT HMI PAR 64

RAFFAELLO

HMI SOFTLIGHTS
QUARTZ HALOGEN SOFTLIGHTS

THE STANDARD FOR SERVICE IN THE LIGHTING INDUSTRY



Italy Headquarters
Via Sisinnio 40 00178 Rome, Italy
tel. 06-7994117 telex 620402 DESMAR I

NORTH & SOUTH AMERICAN HEADQUARTERS

DESMAR Corporation • 328 Adams St. Hoboken, N.J. 07030 U.S.A.
tel. 201-792-4980 telex 226000 ETLXUR

NAB BOOTH # 1131

U.S.A. WESTERN DISTRIBUTOR

CMC • CineMills Corp. 3500 W. Magnolia Blvd.
Burbank, CA 91505 tel. 818-843-4560

U.S.A. SOUTHERN DISTRIBUTOR

ARC Associates • 3914 Raintree Rd.
Jacksonville, FL 32211 tel. 904-744-5214

LATIN AMERICAN REPRESENTATIVE

MONTERO International • 7033 Stewart & Gray
Suite 49 Downey, CA 92241 tel. 213-927-2303

where the shadows cast will not be visible to the camera.

In the hotel room the practical lights were turned on and used as apparent sources even in the daylight scenes. Margulies acknowledges that the question of whether practicals should be turned on for a day scene can often be debated, but he said it was agreed that this particular hotel room was large enough that anyone using it during the day would naturally turn on the lights rather than just relying on the daylight coming through the windows. Margulies put the practicals on dimmers and does not attempt to use them to light the scene. They are simply there as a reference for the lighting effects created with his lighting units. He says that using a dimmer is a much more common and efficient method of incorporating a practical lamp into a shot than the old fashioned method of lining the lampshade with something to cut down the light from the practical bulb.

Margulies estimates that he might have a key-to-fill ratio of two or three to one, but he does not really think in terms of lighting ratios when he works. If he feels he needs to bring up the shadow areas on the actor's face a bit he will add fill light bounced from a 4' x 4' white card.

For the Oval Office the production used a set at the Burbank Studios. It was redressed two different ways for the Kennedy and Johnson years but Margulies' approach to lighting it was consistent throughout. The set was completely solid with no movable walls and since it is actually an oval there are no corners to be used for hiding lights. There are large windows behind the president's desk and the practical lighting consists of indirect lighting around the edge of the ceiling plus floor and table lamps. There was only a white cyc behind the windows instead of a scenic backing but there were plants outside the windows and sheer curtains on the windows. Since the seasons and

the weather would have been changing outside the windows during various scenes, Margulies made no attempt to shoot out the windows. The curtains were kept closed and there was simply a daylight effect for the windows.

To create his ambient light level Margulies used three chicken coops suspended from the rafters about 15 feet above the set. (A chicken coop is a rectangular box with six mushroom type photofloods in it. Gels or diffusion can be attached to the bottom or hung from the sides.) To cut down the spill on the walls Margulies hung 30-inch black skirts on each edge of the chicken coops. He had considered stretching bleached muslin over the entire set and lighting through the muslin to create a soft overall ambient light. Margulies rejected that approach because he felt it would have produced too much top light and would have required additional rigging to cut down the light on the walls.

To light the actors and create effects of sunlight through the windows and light from the practicals, Margulies used both floor units and lights on the scaffolding surrounding the set. There was a ceiling piece which could be moved in whenever the ceiling would be seen in a shot, but for the most part Margulies was free to light from the scaffolding whenever he needed to. For the effect of sunlight coming through the window, he might use a hard back light or three-quarter back light. If the actor was close enough to the window he might light through the window. Otherwise it could come from above or next to the window, and depending on the angle and the color of the actor's hair, he might use a back light coming from each side.

With the chicken coops providing a base ambient light Margulies estimates that he could light a reasonably complex shot in the Oval Office where someone enters the room and moves into a two shot near the desk in about 30 minutes.

Perhaps the most difficult task in the conception of *Robert Kennedy and His Times* was deciding exactly how to handle the assassination and the ending of the film. It was agreed that the assassination should basically take place off camera and the shooting script included a re-creation of Rose Kennedy's eulogy at the end of the film. Beatrice Straight gave a moving performance as Rose Kennedy using the text of the actual eulogy. The assassination was staged at the actual location in the Ambassador Hotel. It was the first time that the hotel had permitted anyone to film in the kitchen and hallway where the tragedy took place. What was shot was simply the group of people headed for the back service elevator to return to the room and veering off through the doors into the kitchen. Apparently at the time of the assassination someone had directed the group through the door and Kennedy was shot after they had gone about five steps into the kitchen. Chomsky staged the scene with the camera positioned in the hallway so that it could not see into the kitchen to the point where Kennedy fell. What was shot was simply the people going down the hall and through the door. There was no gunshot or reaction to a gunshot. At the time he knew he would probably enhance the shot with some kind of effect, but it was not decided exactly what the effect would be. In post-production the decision was made to step print the shot and cut to documentary footage of the funeral train. The effect and the documentary footage were so powerful that the eulogy was dropped and Brad Davis did a reading of a speech Kennedy had to be used as a voice-over with the documentary footage. The final effect was like that of Kennedy's life: tragic and inspirational at the same time. ■

**To serve you
better and faster,**

**DuArt has expanded
its 35* and 16mm
daily services
with additional
facilities and people.**

**For technical assistance
and scheduling information, call:**

35mm	Don Donigi
16mm	Arthur Nalven
Scheduling/Pricing	Bob Smith

***Some of the important 35mm films
processed by DuArt now in release
through major and independent
distributors: "The Natural,"
"Broadway Danny Rose," and "El Norte."**



Du Art Film Labs, 245 West 55th St., New York, NY 10019
(212) 757-4580

Du Art New England, 39 Chapel Street, Newton, MA 02160
(617) 969-0666

Arnold
Schwarzenegger as
the Terminator.



Adam Greenberg on

THE TERMINATOR

Thomas McKelvey Cleaver

"*The Terminator* is living proof that you can make a \$12-million movie for \$6-million," a filmmaker who saw it flatly stated. Another, thinking back to the audience-shaking "eye removal" sequence, said, "That sequence is a textbook example of how a special effect works in the mind of the audience, because absolutely nothing they're reacting to is there on the screen." The film, which came out with little advance publicity during the post-Summer/pre-Christmas lull, has had audiences on the edge of their seats for several months now and became one of the most successful films of 1984.

Adam Greenberg, the Israeli cinematographer whose credits include *The Big Red One*, *A Woman Called Golda*, *Operation Thunderbolt*, and whose work with director Moshe Mizrahi on the films *I Love You Rosa*, and *The House On Chelouche Street* resulted in Academy Award nominations for Best Foreign Film in 1972 and 1973 respectively, found working on *The Terminator* as director of photography one of the biggest challenges of his 20-year career as a cinematographer.

Critic Charles Champlin says that *The Terminator* owes more to Forties *film noir* than to science-fiction. Director James Cameron states that his film influences are the German Impressionists of the Thirties, and *film noir* of the Forties. "That was exactly how I saw it when I first read the script," says Greenberg. "I was aiming for a cool look, lots of dark shadows, strong back light ... a very hard, strong, contrasty look."

In part, this look was dictated by the film's budget. At \$6 million, it is – for what it does – a "low budget" film. "This forced on me a lot of creativity," Greenberg relates. "I accomplished most of what I set out to do by lighting and mood, rather than using a lot of elaborate equipment we couldn't afford. Of my four electricians, three were trainees and two had never been on a set before."

The Terminator is, in the words of its writer-director, "a gun 'n' run shoot-em-up." There are a lot of high speed chases around downtown Los Angeles at night, that look like they were filmed going 90 miles an hour. "What I did," Greenberg reveals, "was have lights on dimmers mounted on cars accompanying us. The lights would operate faster than the streetlights, giving the feeling that we were going very fast. Actually, the cars were never driven faster than 40 m.p.h., but those lights gave the illusion of an extra 25-30 m.p.h."

Indeed, illusion was the name of the game throughout the production of *The Terminator*. "In the alley scene, where The Terminator comes out of the fire and jumps on the hood of the car," Greenberg explains, "it looks like the car is accelerating backwards rapidly. Actually, the car was standing still. They built a false building wall, which was moved past the car, and the dimmer lights provided the illusion of speed."

The scene which seems to stick most in the minds of those who have seen the film is the "eye scene," where the Terminator makes emergency repairs on itself after a gunfight with the hero. James Cameron here made use of his background as a special effects art director. "You have to give the audience a certain level of effects," he stated, "after which they will make their own connections. Done right, you can do these things for much less than other people would think. Give the audience 'A' and 'B' correctly, and they will supply their own 'C'." Indeed, it is classic. First, The Terminator operates on his arm - a prosthetic built by effects wizard Stan Winston - stabbing the arm with a Number 11 Xacto blade. The audience is then shown him working on the metal interior of the arm. He steps to the sink, examines his eye, and then - with the camera shooting from the right as he works on his left eye, he brings up the knife and poses it in

front of the eye. A quick cut to close-up of the eye lens dropping in a sink full of water that turns red, and nearly everyone in the audience is completely convinced they have seen him stab the eye.

"Most of this is possible because the audience does not see everything that's going on," says Greenberg. "Most of the screen is filled with dark shadows, which the audience fills in with imagination."

Greenberg believes that shooting on a lower budget promotes this kind of creativity. "If you have more money to spend, you throw away more. This movie is 95 per cent what I imagined it would be when I first read the script."

Much of the camera work in *The Terminator* is hand-held. "To me," Greenberg states, "shooting hand-held gives an energy to a scene you can't get any other way." At first there was thought of using a Steadicam for much of this, but budgetary constraints precluded that. "I got together with my gaffer and came up with a very simple device that allowed me to do what I wanted, shooting hand-held," Greenberg relates. What was wanted was the ability to have the camera on the floor for extreme low-angle shots, since that was the photographic method used to stylize Arnold Schwarzenegger as the robot Terminator. "He's big to begin with," says Greenberg, "but doing all those low angles makes him look like a monster."

What developed was a piece of equipment the crew came to call "The Adam Camera." Basically two L-shaped pieces of aluminum tubing with a camera mount on one end and a tie-down for sandbags at the other, the mount allowed Greenberg to run with the camera, with the lens on ground level. "I was doing my shooting through a video monitor," he explains. This was used in the disco shootout scene where the Soldier (Michael Biehn) first saves the heroine (Linda Hamilton) from the Terminator, and the

shootout in the police station where the Terminator reduces everything to a bloody pulp. "We also used it a lot in the future scenes. Those were actually more difficult because in the other scenes the floor in the location was all smooth and I could go anywhere. In those scenes, I couldn't."

To Greenberg, lighting is everything. "One thing that makes me happy is that everyone thinks the film was shot using available light. The truth is, I used a lot of light, but it seemed very naturalistic. When I'm shooting, I am always very conscious that I'm shooting actors, not locations. I have to shoot for the actor, for his character, what will look right and say the right things about the actor and character."

"Usually by the second day of shooting, I know just what kind of lights each actor needs. I can have six actors in a scene, and each will have his own light. With Linda, I used very soft, very natural lighting to make the statement about her character. For Michael's character, I used shadows, hard shadows, giving a 'hard edge' to him. For Arnold I was using harsh light that gave a mechanical look, and then a lot of low angles, almost all low angles, to emphasize size."

"I particularly like working with a director who has a personal vision of the project," Greenberg states. "If he has that, there's a much better chance that

Greenberg made extensive use of low angles.





The Terminator threatens Sarah Connor (Linda Hamilton).

something worthwhile will come out of it than if it's something someone brought to him, or something he was just hired to do. There's something additional – something you can't put into words – when the director has his own private story. He has better control."

To Greenberg, the best examples of this come from his work with Moshe Mizrahi on *I Love You Rosa* and *The House on Chelouche Street*, and Samuel Fuller on *The Big Red One*. "Mizrahi was telling stories that came out of his life, the experiences of people he knew," Greenberg explains, "and Sam Fuller was telling the story of the most important things that ever happened to him personally."

As a cinematographer, Greenberg prefers location work to studio shooting. "I like to go away to shoot, away from my family, to be isolated from the rest of

the people I know in life. It's the best way to concentrate. To me also, location shooting gives an edge of reality to what's being done that can never be re-created in a studio. This preference probably comes from having begun my career as a news cameraman, then moving into documentary filmmaking." The bottom line, however, is this: "For me, working on a movie anywhere is a vacation. No matter how hard it is, it's not 'work.'"

Greenberg's lifelong love affair with movies began as a child. "I always wanted to go to the neighborhood cinema when I was a boy in Israel. I loved the movies, they were magic." Later, as he became more seriously interested in film, "... it was the New Wave, particularly Godard with his camera work, and Chabrol. They opened things up and took the movies out in the real world where people lived."

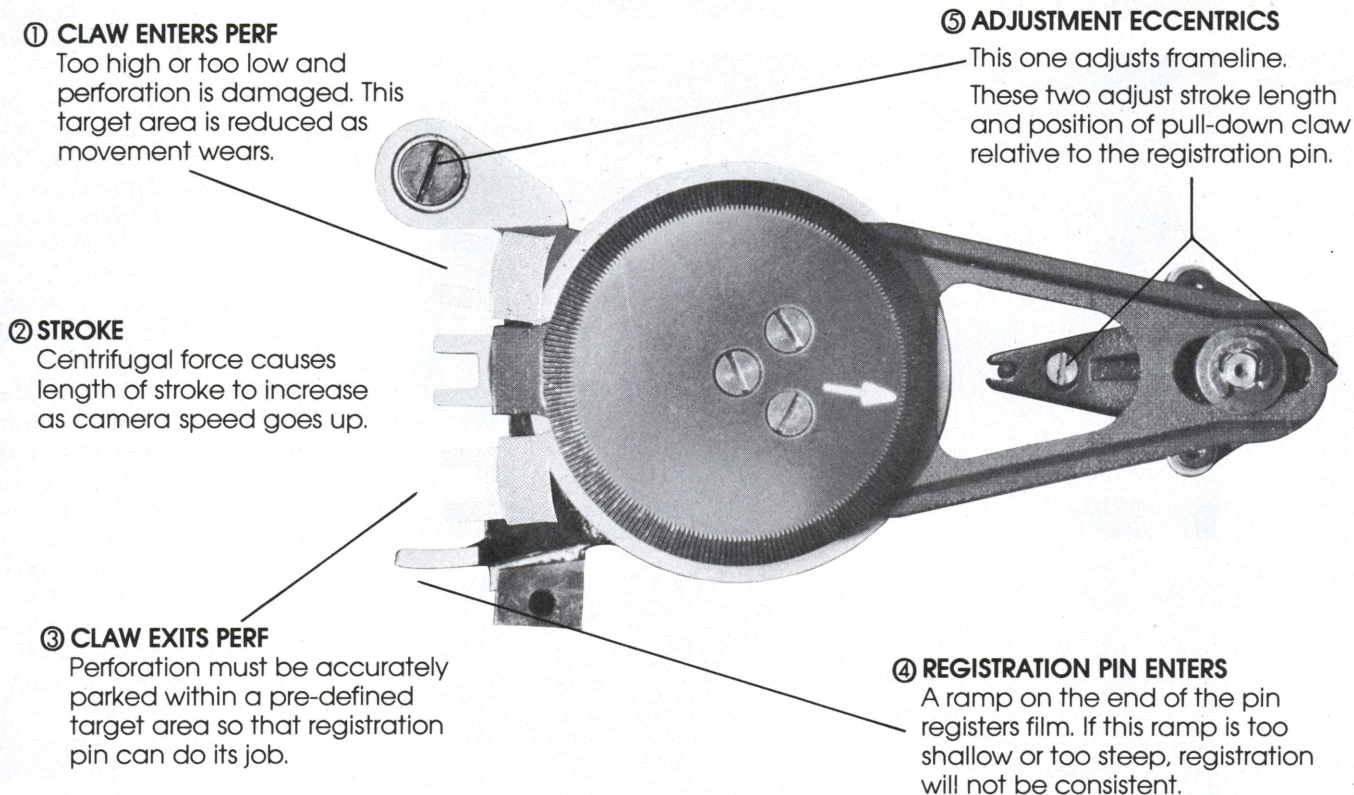
So far as the influence of other cinematographers is concerned, Greenberg is an avowed fan of Vittorio Storaro. "His work is head and shoulders above everyone else, to me. When I go see a film he's shot . . . it doesn't matter what the story is or who's in it. Storaro is the greatest so far as I'm concerned."

With a film as successful as *The Terminator* in his credits, Greenberg finds the offers to work coming in from all quarters now. "When I choose a project though, it's not for how much money is involved. I like to work and I'm not going to be poor, but I'm not in it to become very rich. I look at the story, what it's about, what it's saying about things. I look at who's involved. Are they people I want to meet, to work with. The story and the filmmakers. That's much more important than the money." ■

ELEMENTS OF QUALITY: **FILM STEADINESS** (IT'S ADJUSTABLE)

Even the most precise movements need adjustment to guarantee rock steady pictures. At Victor Duncan, Inc. we have the tools, techniques and expertise to perform these adjustments in each of our locations.

Here's what we look for:



Film Steadiness ... One of the elements of quality we supply with each and every rental.

VICTOR DUNCAN, INC.

FILM • VIDEO • AUDIO • RENTAL • SALES • SERVICE

CHICAGO

661 N. LaSalle Street
Chicago, IL 60610-3770
(312) 943-7300

DALLAS

Four Dallas Communications Complex
Irving, TX 75039-3510
(214) 869-0200

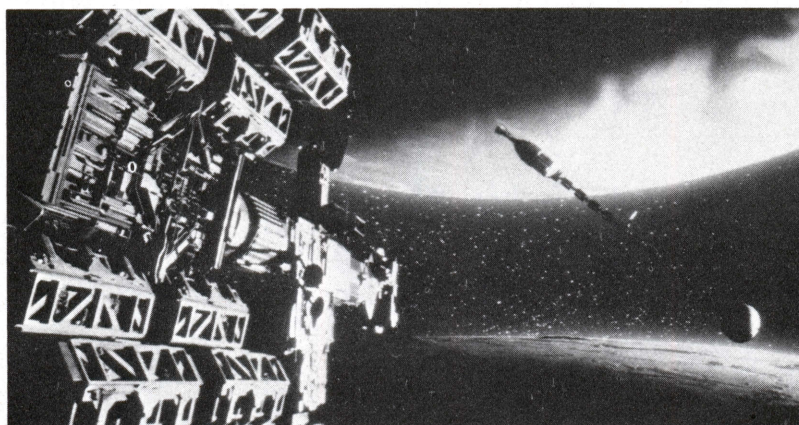
DETROIT

32380 Howard Street
Madison Heights, MI 48071-1429
(313) 589-1900



ACADEMY VISUAL EFFECTS NOMINEES

2010



*Indiana Jones and
the Temple of Doom*



Ghostbusters



That 1984 was an outstanding year for visual effects can be verified by a glance backward. It was the year of *Ghostbusters*, 2010, *Star Trek: the Search for Spock*, *The Last Starfighter*, *Gremlins*, *Dune*, and *Indiana Jones and the Temple of Doom* – any one of which could have won an Oscar in an average year. It was the job of the Visual Effects Committee, chaired by Joseph Westheimer, ASC, and consisting of 110 industry professionals whose expertise in the field adds up to the last word, to select the best of a fine lot.

After a long evening of re-screening the visual effects sequences from these pictures, the committee narrowed its choices to three titles: *Ghostbusters*, 2010 and *Indiana Jones*. From these three a winner was elected by the general membership of the Academy of Motion Picture Arts and Sciences.

Indiana Jones and the Temple of Doom features some truly unusual effects produced at Industrial Light and Magic (ILM), effects facility of Lucasfilm, Ltd. in San Rafael, California. Dennis Muren, director of visual effects, Michael McAlister, Lorne Peterson and George Gibbs are cited for the achievement. Muren won Oscars for his work in *The Empire Strikes Back*, *Raiders of the Lost Ark*, *E. T. – the Extra Terrestrial*, and *Return of the Jedi*, and a Scientific and Engineering Award for an animation device. He was nominated previously for *Dragonslayer*.

Mike McAlister, special effects cinematographer, shot a great variety of miniatures, including animation and computerized photography. Lorne Peterson, a master sculptor and model builder, was in charge of the miniature construction. George Gibbs was in charge of full-scale effects such as lava, flood waters, the rope bridge, the mine cars, the moving idol of Kali, etc.

The picture contains numerous matte paintings which are composited with actual scenery and settings and a great many traveling mattes which required intricate frame by frame animation. Blue screen compositing of a high order made possible such sequences as actors being chased down a tunnel by a wall of water and a scene placing them in an eerie miniature cavern.

Model animation was used in some striking scenes of villains falling from a high suspension bridge into a crocodile infested stream. The figures, which move in a lifelike manner, were created over intricately tooled and jointed metal "skeletons" and were less than one foot tall. In one instance the camera follows a wildly flailing character as he plunges down the face of a cliff, a scene which required animation of the figure and the camera moves, use of a previously photographed full-scale background and hand-drawn shadows of the victim on the cliff.

The most striking sequence is a chase in ore carts through a complex, dangerously ancient mine. Animated models are intercut with live action scenes of the characters in a long, breathtaking stretch of non-stop action. A special movie camera was made from a Nikon still camera to film the stop-motion scenes in the narrow confines of the tunnel.

Miniature projection also was utilized, as when the principals, photographed in a studio in London, are shown climbing on cliffs supplied by a matte artist at ILM.

Both *2010* and *Ghostbusters* depend heavily upon the visual effects produced at Entertainment Effects Group (EEG) under the direction of Richard Edlund, ASC. Edlund has won four Oscars – for *Star Wars*, *The Empire Strikes Back*, *Raiders of the Lost Ark* and *Return of the Jedi* – and a nomination for *Poltergeist*, as well as two Scientific and Engineering Awards (for a beam-splitter optical printer and the Empire Motion Picture Camera System).

Also named for *2010* were Neil Krepela, matte department supervisor, whose work previously was evident in many of the Lucasfilm productions; George Jensen, visual effects art director, a leading expert in a highly specialized field; and Mark Stetson, model shop supervisor, whose craftsmanship in such films as *Blade Runner* and *Ghostbusters* is well known.

Named with Edlund for *Ghostbusters* were Mark Vargo, who headed the EEG optical effects team; John Bruno, special effects art director and storyboard artist; and Chuck Gaspar, a leading mechanical effects and pyrotechnics expert.

There are about 300 effects shots in *2010*, many of which had to be combined optically with live action photography and, in some instances, computer generated images. Storyboarding was carried out in such precise detail as to dictate even the choice of lenses. The nature of the story demanded that many effects scenes remain on screen for long periods of time, a sure way to destroy desired illusions unless all craftsmanship is of the highest order.

Because there is no fill light in space, there was little opportunity to use conventional blue screen technique to composite the space scenes. Frontlight/backlight mattes were utilized for most scenes, which was practical because of the hard-edge effects that dominate the space shots. Reality was demanded because of the serious nature of the story. Much more freedom is permitted in the fantasy worlds of the *Star Wars* saga or *Ghostbusters*.

Computer imaging, provided by Video Image company, played an important part in the making of *2010*, as did Digital Productions, which created the turbulent surface of the planet Jupiter.

An effects crew peaking at about 100 worked on *2010* in the course of a 16-month schedule.

Ghostbusters required about 200 effects shots, which were done over a 10-month period by a crew which sometimes numbered 160. About 50 matte shots with paintings by Matt Yurich were utilized to alter the New York architecture to accommodate imaginary locales such as a huge temple atop a skyscraper. "The show was based on matte paintings," Edlund said.

Miniatures, model animation by the stop motion method, tank cloud shots, art animation for laser and wand-weapon effects, carefully controlled superimpositions of ghosts, and numerous blue screen composites were necessary to picture the flights of fantasy envisioned by the writers and director. Remarkably, *Ghostbusters* and *2010* were in the works simultaneously. Edlund says that there was no way of confusing the two jobs, however, because the demands of each were so dissimilar to the other.

All production at EEG is done in 65mm. Two new pieces of 65mm equipment were specially built for *Ghostbusters* and *2010*: a high-speed, rotary mirror reflex camera capable of running at more than 105 fps, and an aerial image optical printer made to composite 65mm elements and matte paintings directly onto 65mm or 35mm film. Most of the effects scenes in *Ghostbusters* aim for far out, humorous results, which offers a great deal of freedom of conception and technique. A high degree of craftsmanship was required, however, because the fantasy had to blend in with a solid, contemporary New York setting.

Because of a seemingly impossible deadline, some of the elaborate scenes planned for *Ghostbusters* had to be simplified or re-thought. There was little opportunity for the extra finessing Edlund and company would have liked to have given it. It has, however, the most elaborate comedy production gags of any picture yet produced. ■

**Because your
needs
vary from day
to day:
a wide choice
of
equipment**



Lens choices at Clairmont:

For example: six types of
18mm lens, in three types of mount.

Four types of superspeed
set. Eight types of 35mm zoom. PL
mount superspeed sets –
and the new Zeiss PL normal speeds.

The new Zeiss T2.1 PL
mounts cost about a third
less than the PL superspeeds.
We have them in stock *now*.

We also have more Zeiss
PL superspeeds than anyone
else in town. So you don't have
to use adapted B mount lenses
with our 35BL-3s. (*PL mount
lenses help to quiet the camera,
of course.*)

Some unusual wide-angles

Visible on the opposite
page, mounted on one of our
Century Precision periscopes,
is our Nikkor 8mm f2.8
fisheye. It mounts on our 35-3
cameras, too. (*So does the
periscope.*) We also have the
CP 7.5mm T3.5 *non*-fisheye.

More wide-angles: the
Kinoptik 9.8mm T2.3 in ARRI
bayonet mount; the Clair-
mont 14mm T2.8, the Distagon
16mm T2.2 and the Clairmont
20mm T2.8.

Among our six different
18mm lenses is the Zensho
T1.6 that focusses down to its

front element. We also have
the Canon T1.5. Very sharp,
very low distortion – *an im-
portant lens*; ARRI standard
and BNCR mounts. The other
18mms are by Canon, Cooke
and Zeiss.

All modern lenses, so they intercut

All these are up-to-date
lenses – modern coatings,
modern cement formulas,
modern glass – so they inter-
cut perfectly. We test them for
color-matching; and we guar-
antee it.

On the opposite page, you
can see one of our Technovi-
sion Cooke 25-250 T2.3 zooms;

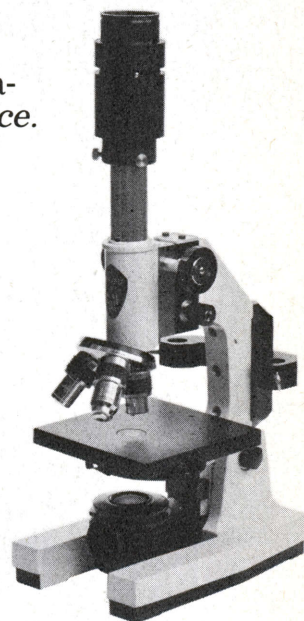
and a 14mm Zeiss T2. The
Technovision is optically the
same as the earlier Cooke, but
mechanically updated. The
Zeiss is a PL superspeed.

Long lenses from 135 to 1200mm

Focal lengths: 135, 200,
300, 400, 500, 600 and 800mm,

by Canon, Nikon and Zeiss –
plus our Combi Kilfitt system
that goes out to 1200mm.

We have various macro
and micro lenses, including
the rare 75mm Kinoptik
macro. And the bellows you
see opposite – ARRI mount to
the camera, Nikon mount at
the front. Our microscope has
a standard ARRI mount and
gives you
40X, 100X
and 400X
magnifica-
tion. *Choice.*



CLAIRMONT CAMERA

4040 Vineland, Studio City, CA 91604. (818) 761-4440



*Robert Redford as
Roy Hobbs.*

Caleb Deschanel, ASC, and

The
NATURAL

Robert Krey & Michael Haney

Unique among the films nominated for a best cinematography Oscar, the script and character of *The Natural* are mythic and legendary, elevated far above the commonplace by their quintessential role types, appearances and actions. Thus, the script required photography that was equally beyond the commonplace to give such larger-than-life characters their rightful environment. Hence Robert Redford made the logical choice of calling Caleb Deschanel, ASC whose films *The Black Stallion* and *The Right Stuff* contained heroic characters, legendary events and complimentary cinematography.

Deschanel says that the book from which the screenplay was adapted "was derived a lot from the myth of baseball." Devising mythical photography for the picture became an extensive, interpretive task. This is precisely the creative challenge that Deschanel seeks in his work. "I liked the opportunity to find a way of conceptualizing the visuals of the film because there was so much valuable material in that respect." Discussing the judge's character (Robert Prosky) and how it is related in the book, he said, "It is description that presents itself in visual terms, which is wonderful. To me the most important part of doing a movie is coming up with a concept for the visual style." Deschanel frequently reads a script ten times or more while conceptualizing. "You really have to read and understand the drama and understand what each character is motivated by."

After reading the book and the script, Deschanel concluded that *The Natural* is in its simplest form based on Arthurian Legend, so there are all these wonderful black and white characters. "You're presented the opportunity to stylize each character in terms of how they're lit and how they're presented in a visual sense.

You devise a visual style for the overall film and each scene in the film within the overall context. Then in a film like this you can actually create a kind of visual style for each important character."

The film's opening section depicting the period from Roy Hobbs' boyhood up to his departure for the major leagues was the only one directly inspired by another art form. Autochrome was an early European two-color process which combined color and black and white technology to yield color prints of low saturation that are similar in appearance to hand-tinted black and white photos. Since the process was popular in the 1920's it was appropriate to revive a similar scheme for that period in *The Natural*. Deschanel chose to emphasize only the pale greens and burned yellows of the grass in the American Midwest, thereby evoking the look of the twenties in the heartland.

From the time Redford leaves the farm, many interiors are given an amber tone through the use of gels. Frost filters enhance the glow of the practical lamps. This combination effectively creates a nostalgic atmosphere. When not motivated by practical lamps, the warm light is justified by the need to displace the story from the present and give it the look of a nostalgic American past.

The daytime baseball scenes were set in bright sunlight and slightly overexposed to enhance the feeling of a bright sun. "In *The Natural* I always saw the baseball scenes in sunlight. To me, the essence of baseball is that ... everything's in the sun. I didn't want them to ever escape from baseball light even when they were in the locker room; so, except for some scenes, we brought that baseball light into the locker rooms as well. Even though it was a refuge from the field you still had the presence of the sunlight."

On another level, Deschanel approaches visual style in terms of overall color and how one can achieve dramatic emphasis with color. His general thoughts



A baseball setting is combined with Arthurian legend to produce an American myth in The Natural.



Color and lighting were used to underscore the purity and wholesomeness of Iris (Glenn Close)



on color reveal much of how it functions in *The Natural*. Like much of his approach to cinema, it is inspired by Gordon Willis, ASC, with whom Deschanel interned years ago. "Gordon Willis says something wonderful which I really believe; that is, what you're doing is taking away color more than you're adding to it. You start looking at a scene and say, 'Let's take this color away.' We moved everything as much as possible towards black and white so that when you did have a character like Iris, (Roy Hobbs' true love played by Glenn Close) who wore pale yellow floral prints, it would have

a certain impact. If you have too much going on you can never make a statement with color. If you have absolutely no red in the film and suddenly somebody is wearing a red rose, it has an effect on the audience." When Harriet (Barbara Hershey) first appears with a rose, the red visually tells about the active part she will play. "It's a subtractive process rather than an additive process. That's the key to knowing what to do within scenes."

The baseball scenes are strong (as well as expensive) examples of the subtractive color approach. Deschanel, Barry Levinson and production designer Mel

Bourne decided that the stadium scenes should be colored only in black, gray and the deep green of the grass. First, this required that the fans be clad in grays, black or neutral, low-saturated or pastel colors. Secondly, the piping on the players' uniforms was to be a dark navy-blue, which would appear black from a distance. As it turned out, the order from the outfitters was incorrect and the uniforms were delivered with a bright, glorious royal-blue piping. Not to be denied, Deschanel and company had the wardrobe department darken the piping on all the uniforms with black markers. The final step in applying the subtractive color process to the baseball scenes was indeed additive to the film's budget. Painters were sent in to repaint all the thousands of brightly colored seats gray and to remove other offensive colors around the park. Cost aside, Deschanel's approach to color was here uniquely effective in creating the feeling and atmosphere of the past which was demanded by the script.

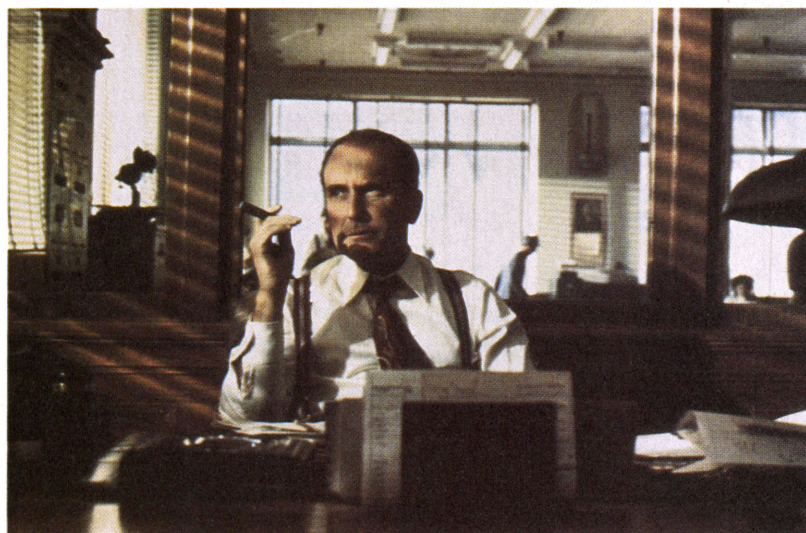
The Natural's visual style was also inspired by the clear contrast between good and bad characters and the events of the story. Deschanel felt that in such a story it is appropriate that these contrasts and extremes be manifested literally in the photography. The lighting in the film has a similarly broad range and the director of photography emphasizes that this lighting is specific to *The Natural*. "The lighting used, if drawn out of context, would be absurd. There are such extremes in the intensity of the highlights and deepness of the shadows. It's really another world that's created for the movie and it only works in this particular movie. Lighting is an interpretation of the drama and becomes real only within the context of that drama."

Because of the strong character types in *The Natural*, Deschanel was presented with the opportunity to define and separate them through photography. In a film like this, "You are presented

with the opportunity to . . . stylize each character in terms of how they are lit and how they are presented . . . in terms of wardrobe and terms of setting." Iris is depicted in visual terms that are derived from her wholesome personality. The floral print dress and white hat echo her pristine qualities. "She's always in bright light . . . in this pure light. She has an iridescent quality. We wanted to create the sense of her always being aglow. If it wasn't the light in her face, it was the light which lit the hat. The only time she's in the shadow is when she's talking about her past with Redford." Quite literally, Iris is lit by a less diffuse and more brilliant light. Contrast this with the visual treatment of Harriet, the silver bullet assassin. Her black wardrobe and dark hair seem to absorb light, not to reflect it, and she is often cut by shadows.

'Point of view' is one principle that Deschanel uses to arrive at the conceptual logic for the visual style of every film. This, in its simplest form, bases the look of a film on an appreciation of the subjective impressions of a key character: "That's something I've really gotten from Gordon Willis. Every film has a point of view. It's an understanding of what *that* character would see." In *The Natural*, this translates to a presentation of the story from Hobbs' perspective.

The scene in which the young Roy Hobbs strikes out The Whammer with three pitches is the point of view principle in action. This interlude by the side of the railroad tracks is not only an emotional high point for Hobbs, but also sets in motion a series of events that change his life. "One place where I considered slow-motion important is where (Hobbs) strikes out The Whammer, because that's the big changing point in his life. It's the point at which Harriet Bird notices him and later shoots him as a result. It's one of those examples where if somebody's whole life could be reduced to one critical moment, it



Deschanel's lighting was stylized for each character or setting according to an interpretation of the mythic or dramatic elements in the script. The sunlight associated with baseball penetrated the locker room, and the low key lighting associated with Max Mercy was influenced by Robert Duvall's interpretation of the character.

was *that* moment in his life, and that moment becomes his past, and it's that past that affects the rest of the movie." The visual elements (the white chaff in the air, the carnival in the background, the warm light from the setting sun) combine with slow-motion and montage editing to create a heightened feeling for the scene – almost as if it is being replayed from Hobbs' memory.

Throughout the film, stylized lighting plays a strong role in the development of character and story; but always from Hobbs' point of view. The most obvious example of this has already been referred to: the halo of light on Iris' hat when she stands up at the baseball game makes her obvious

in the crowd and also reflects her pure and beneficial place in Hobbs' memory. Deschanel's use of lighting to define characters from Hobbs' perspective surfaces clearly in three scenes that take place while Hobbs is recovering in the hospital. Hobbs is first visited by Iris. The light, typically for her, is bright sunlight through the windows. When Memo (Kim Basinger) visits, the full sunlight is gone, and the room's lighting is moody. The third visit is by the judge. Appropriately it takes place at night. The light in this scene is threatening. It is keyed from low angles and oversize shadows crease the walls. Such dramatic differences in lighting would be



Production design and cinematography were coordinated in the stylized presentation of *Memo Paris* (Kim Basinger) as the opposite of Iris in *Hobb's life*.



unmotivated in contemporary films with more commonplace characters.

Deschanel emphasizes that the stylistic devices in this film are derived from a definite principle. "Even if you make a mistake with (your choice of) point of view, you're much better off having a point of view than going out and shooting a bunch of shots ... a lot of times films are just shots

... They don't have a commitment when they come into a scene. That really boils down to understanding a script ... It's important to have a really good concept going in." The point of view principle works in *The Natural* because it anchors the visual style of the film in an understanding of the lead character and his place in the drama.

Another important aspect of Deschanel's approach is in the casting. Redford is one of those stars who has become a contemporary legend. His being cast in the lead provides the hook that readily leads audiences into accepting the mythic qualities of the story. Deschanel believes that one of the major components of the visual style of a film is in the choice of actors. The look of a film, he says, "partly comes from what happens when (the film) is cast." Robert Duvall was chosen for a certain quality that he brought to the role of the sports reporter. However, as his character was developed, so did the way that Deschanel portrayed him. "You have a vision of each character before it is cast and that vision gets altered

somewhat, and hopefully for the better ... some actors act with their eyes, others with their voices."

Deschanel's approach to a visual style is thus refined by the actor's work. "I know how I treated Bob Duvall was altered by how I saw his performance evolving ... (he developed) this reptilian character which I found fascinating and to some extent that dictated the kinds of settings he was placed in." Like a lizard, he is seen in dark rooms, the tunnels under the stadiums, and in a glass booth that looks rather like an aquarium. Deschanel and Levinson place Iris and Memo in equally revealing locations. Iris is always 'at home' - whether she is in her own comfortable apartment or in a similarly familial setting in Chicago, the soda fountain. Memo, on the other hand, inhabits sleazier spaces; dark offices, glittery nightclubs and sultry bedrooms.

Even as the actors' work causes his visual approach to evolve throughout principal photography, Deschanel believes that there is also an instinctive and improvisational aspect to shooting a film which makes the visual approach an even more fluid process. The scene in which Harriet shoots Hobbs is one which could be photographed many ways to emphasize the drama of the moment. The most logical way to shoot Hobbs walking down the hall towards Harriet's room would be from in front of him, perhaps in close-up. This would capture his facial expression before the fateful moment. However, after rehearsing on the set, Deschanel felt that shooting Hobbs' approach to the room from behind created the appropriate image for the drama of that moment. He maintains that his decision was instinctive rather than logical. Deschanel's acting upon gut feeling suggests that instinct and improvisation are both important and inevitable aspects of his approach.



Left: Caleb Deschanel, ASC, with director Barry Levinson on location for *The Natural*. Below: Composition and natural lighting combine with the setting to produce a typically mythic image of Roy and Iris.

The hallway scene was shot both ways; from in front and from behind Hobbs. In editing, the decision was finally made to use the shot with Hobbs facing the camera. Even with the intense preparation Deschanel brings to every picture, he is aware that the filmmaking process is fluid and evolves greatly right through post-production. "Your interpretation of a film can be altered in the course of editing. You end up making certain decisions that hopefully will be in sync with the film when it is finished." Nevertheless, Deschanel's appreciation comes more from the impact of the entire film, rather than from any particular scenes. "I'm most satisfied with the way the visual style has helped capture the overall dramatic intent of the movie. That is where I get pleasure." ■





*A 1/30th scale
model of a ruined
Thai temple was
constructed on
location.*

Chris Menges and

THE KILLING FIELDS

Paul Sammon

Chris Menges, the British cinematographer nominated for an Academy Award for photographing *The Killing Fields*, has been involved before with political subjects.

"To me," Menges explains, "how you get interested in a film really comes down to what makes your eyes twinkle. You do things that make you grow and make you learn, and I've always been interested in things that teach me something. I do look for films that are caring, which *The Killing Fields* certainly is. That's where the politics comes in – learning and caring."

The Killing Fields was nominated for Oscars in six other categories besides cinematography: best picture, best screen play from another medium, best actor, best supporting actor, director and editing. The story charts a moving tale of friendship and survival, tracing two journalists from different cultures who not only come to understand one another as human beings but ultimately save one another's lives from the genocidal politics that massacred nearly a third of Cambodia's population in the mid-1970s.

The Killing Fields is based on an article which first appeared in the January 20th 1980 edition of the New York Times, titled, "The Death and Life of Dith Pran: a Story of Cambodia." The piece was a first-person reminiscence by Times journalist Sydney Schanberg, who in 1972, went to Cambodia to cover the war between the U.S.-backed Lon Nol government and the revolutionary Communist Khmer Rouge (literally meaning "Red Scarf"). During the next three years in Cambodia, Schanberg's constant companion and assistant was Dith Pran, a native journalist who had previously worked in liason from Cambodia with the Washington Post before switching to the Times.

On April 17, 1975, the victorious Khmer Rouge entered Phnom Penh, the nation's capital, an invasion which was the begin-



ning of a ruthless, systematic, nationwide program of murder and starvation. Dith Pran saved Schanberg's life from a Khmer Rouge firing squad that day and Schanberg eventually was allowed to leave the country. But, Pran, like all Cambodians, was ordered out of the city and into a work camp, where he disappeared.

Chris Menges began his career at age 17, as an apprentice filmmaker to American Alan Forbes by making documentaries. He later joined Granada Television's "World in Action" as a cameraman, touring Burma, Nepal, the Congo, Vietnam and Thailand, photographing war and revolution. In fact, Menges filmed extensively in Southeast Asia as both a documentary maker and a cameraman during the Vietnam War, and "got to know Thailand, where *The Killing Fields* was shot, like the back of my hand."

Menges has also shot a number of feature films and served as a second-unit cameraman under director of photography Peter Suzchitsky on *The Empire Strikes Back*. His current assignment is *Marie*, for which he filmed certain segments inside the actual death

row of a Tennessee state prison. "I suppose Roland Joffe asked me to do *The Killing Fields* for a number of reasons," said Menges. "Style had something to do with it although it's so hard for me to answer any questions concerning a personal style. I guess my style has been influenced by the great photographer, Cartier Bresson, who has had an enormous emotional effect on me as far as photography is concerned. Also while I was in Southeast Asia, I had earlier met some of the people who would later be portrayed by actors in *Fields*."

"Then came the story – story is more important to me than anything. I cared about *The Killing Fields* story very much. And, of course, there is the director – if you must know how I conceive of working on a film. You must serve and, in a sense, respect the director. And you must be at one with him, be close to the director's perspective; if you're not you'll wind up making what only can be described as a schizophrenic film."

Most of *The Killing Fields* was shot on location in Thailand.



whole thing hand-held. But when Roland told me he had seen those documentaries and wanted *The Killing Fields* to look more like them than a big feature film, I knew he wasn't asking for a lot of hand-held shots. What Roland was looking for was a roving eye trying to capture and find a moment in the jungles of Burma under all that pressure, of being chased around and blown up and ambushed. Lots of our friends were killed while we were making those documentaries. Roland was very much into the idea of the camera as an eye, looking, trying to understand."

Writer Bruce Robinson spent 2½ years researching and writing *Fields*, an effort that included trips to the United States to meet Schanberg and Dith Pran and a visit to Southeast Asia. While Robinson was busy with his screenplay, David Puttnam began to assemble the rest of his crew.

"Roland Joffe, the most organized director I've ever met," according to Puttnam, was then sent a copy of the script. "I started to read that script just before turning in one night," Joffe recalls, "and I read it straight through and finished it at 4:30 in the morning. It was an incredible screenplay. And I was personally amazed, I'd no idea that this had been going on in the world – this savage and tragic Cambodian situation. So I sent the script back to David telling him I thought it was marvelous and good luck!"

"Sometime later I was at an awards ceremony in London, where David was running up and down the stage to collect awards for *Chariots of Fire* with monotonous regularity. Then he stopped by my table and asked, 'What are you doing next year?' I started to tell him I'd just begun to write something when Puttnam interrupted with, 'Well, forget it, because you're going to be spending next year with me. Why do you think I sent you the *Killing Fields* script?' And that was my start with the film.

"Chris and I wanted to get the macabre, malevolent

Menges' experience as a documentary cameraman in Southeast Asia influenced his style on *The Killing Fields*.



"But the greatest reason Roland wanted me was based on the strength of two previous films I had shot," concluded Menges, "documentaries that ran on television called *The Opium Trail* and *Opium Warlords*." In 1973 Menges and Adrian Cowell had entered the jungles of Burma to film these documentaries on the drug trade, carrying a 16mm Eclair camera equipped with a 10 to 120 Angenieux zoom lens. And then Menges and Cowell vanished for 18 months. When they re-emerged, Menges discovered his wife had given him up for dead. What came from the experience was a harrowing story: Menges and Lowell had not only penetrated the deepest society of drug

smugglers but had also constantly been faced with death, had been forced to live in caves under extremely primitive conditions, and were blocked repeatedly trying to get the negative out of Burma before they finally left that country a year and a half after entering it. (Menges completed his drug documentation, in a sense, by filming where the Burmese opium was delivered in his 1982 documentary *East 103rd Street*, a film centering on a Harlem-based family of Puerto Rican junkies.)

"Most of *Opium Warlords* was shot in the 50mm and 60mm range," Menges explained, "and I had done all my own loading and focus pulling and shot the

beauty of the country where *The Killing Fields* takes place,” Joffe added, “as well as the cold malevolence of a combat situation which, after all, has a certain beauty. Another thing we discussed was how to break up the edges of the frame with movement and fluidity. Plus, of course, there were the purely technical details. Chris eventually put together a complicated lighting scheme that could take in both the hot season’s glare and the high contrasts generated by the cloudy skies during the monsoon season.”

Menges now began assembling his camera crew, a group consisting of camera operator Mike Roberts, focus puller Jeremy Gee, clapper/loader James Ainslie and gaffer Peter Bloor. This was a tough project and my whole crew contributed enormously.” Menges says, “Most of *The Killing Fields* was shot with Arriflex BL-3 cameras. For the film’s many tracking shots, a small Scorpion crane with 150 feet of track was also utilized. For lighting, said Menges, “We had three Brutes, quite a lot of 9-lights, some 2K’s and a bit of quartz. But basically *The Killing Fields* was lit with a lot of 9-lights and those three Brutes.”

Says Joffe: “We all wanted *The Killing Fields*, in the end, to be about Dith Pran. And I thought it would be absolutely wrong for anyone but a Cambodian to play the part. But after the Khmer Rouge had finished with their purge of this country there were no actors left. So there was simply no one to pick from but Cambodian refugees. We interviewed people throughout the U.S. It took a long time. I must have looked at over 1000 people. Finally, only six weeks before we were to start filming, we found a doctor (Haing S. Ngor) in Long Beach who really had no willingness at all to audition.

“But I asked Haing to describe the fall of Phnom Penh, and as he did so I realized he was describing what he saw as an actor would. So I asked him to improvise a scene, to play a doctor



Director Joffe began by storyboarding the entire film and sought to capture the cold malevolence of a combat situation which he describes as having a certain beauty.





Sam Waterston portrays New York Times correspondent Sydney H. Schanberg whose article was the basis for the film.



asking his American nurse – who happened to be Pat Golden, one of our casting people – to leave Cambodia due to the dangerous situation. And without any preparation he did this improvisation so well that it left Pat in tears. So we then gave Haing a difficult camera test, and he did it perfectly. He was the first natural professional I had ever seen. Here was a man who had literally never acted before, and he handled himself in a \$15 million film wonderfully.”

A practicing physician when his country was taken over by the Khmer Rouge, Haing Ngor knew of the Rouge policy of exterminating educated people and managed to survive the purge by pretending to be a commoner, just as Dith Pran had. However, in the four years he lived in Cambodia under the Khmer rule, Haing watched his own parents, two sisters-in-law and their three children, four brothers, his fiancée’s mother and his fiancée (who passed away in Haing’s arms due

to starvation) all die. Only Haing and one niece survived. In the interim, though, Haing was tortured three times by the Khmer Rouge for suspicions of being a doctor (a fact he never admitted, which Haing thinks saved his life). While being tortured Haing was hung upside down for days, almost suffocated by a plastic bag, severely burned on the shin and cut on the ankle by a hatchet “so I wouldn’t run away.” When the North Vietnamese invaded Cambodia in 1979, Haing and his niece escaped to Thailand, where he worked 18 months in a refugee camp before arriving in Los Angeles in October 1980. Haing S. Ngor is currently president of the West Coast Branch of the Cambodian Association of the United States.

“I didn’t even know until I got to Bangkok to begin filming how large my part was in *The Killing Fields*,” Ngor recounted. “I didn’t get the script until then! I was terrified to find out I was one of the leads, since I had never acted before. But I told Roland I had a certificate from four years training in the Khmer Rouge Acting School. And I decided to do the film because I thought it would be 100% good for my country. The world has already forgotten the plight of Kampuchea, but I think *Fields* will make them take notice again.”

As for Joffe’s impressions of Haing’s acting, the director said, “Let me tell you a little secret – every line of Haing’s dialogue was dubbed in after the fact, because in the heat of the moment he would sometimes lose his grip on his English. Now to dub your part is quite complicated, but even in the most emotional scenes Haing dubbed better than any actor I’ve ever worked with. This proved to me that though this man had never acted before he was still a professional, and quite a gifted one.”

Tackling the visual unity of the film meant, for Joffe, an initial period of storyboarding. “I felt it was absolutely essential to board

The Killing Fields, so I story-boarded the whole film myself. The entire picture was first drawn out, with the camera positions and the tracking shots and a lot of the cutting, too. And then the film gradually grew, through everyone's input."

After a six-month pre-production period *The Killing Fields* unit turned their attentions towards possible physical sites for the filming to take place. Joffe insisted that the film not only eschew artificial soundstage interiors but that, further, the production be based in Southeast Asia. Consequently, after evaluating the countries of the Philippines, Laos, Indonesia, Malaysia and Borneo, the *Fields* unit decided on what had been their initial choice in the first place – Thailand. "We went to Thailand because it was the closest we could get to Cambodia," said Joffe. Other reasons included a government sympathetic to the filmmakers and a long border running next to Cambodia, as well as Thailand's geographical similarities to Kampuchea. During the preproduction period Joffe and associate producer Ian Smith toured Thailand with production designer Roy Walker, attempting to find the various locations that, when assembled on film, would give a coherent and convincing simulation of Cambodia's capitol city of Phnom Penh (where much of *The Killing Fields*' action is set).

"During production we shot mainly in and around four Thai cities," said Menges. "Those were Phuket, Nakhon Pathom, Bangkok and a little bit of filming at the refugee camp of Khao-i-Dang on the Thai/Kampuchea border. And the government was marvelous to us throughout the entire shoot. The Thai Foreign Ministry did express some reservations about the script," said Joffe, "but as in all these things we tried to show some consideration to them and they showed some consideration to us. The Thais mostly left us alone – they sent a censor out to our locations, but in the

confusion of the day very few people knew what was going on, least of all the censor. We didn't have cooperation in the governmental sense, but the Thais are a very generous and open people, and where they could help us they did."

Despite the lack of interference, however, Joffe soon found that "the logistics of shooting this film were horrendous. Whatever you decided to do on any given day you literally *had to do*. There was no room to make a mistake." Joffe also soon discovered that, although the Thai military had provided much of the hardware needed for the film, certain large helicopters crucial to a key scene could not be found anywhere but in the United States. *The Killing Fields* company subsequently decamped to the Camp Pendleton Marine Base near Oceanside at the end of the Thailand shoot in order to film these sequences; other location shooting was done in Toronto, Canada, which stood in for Metropolitan New York.

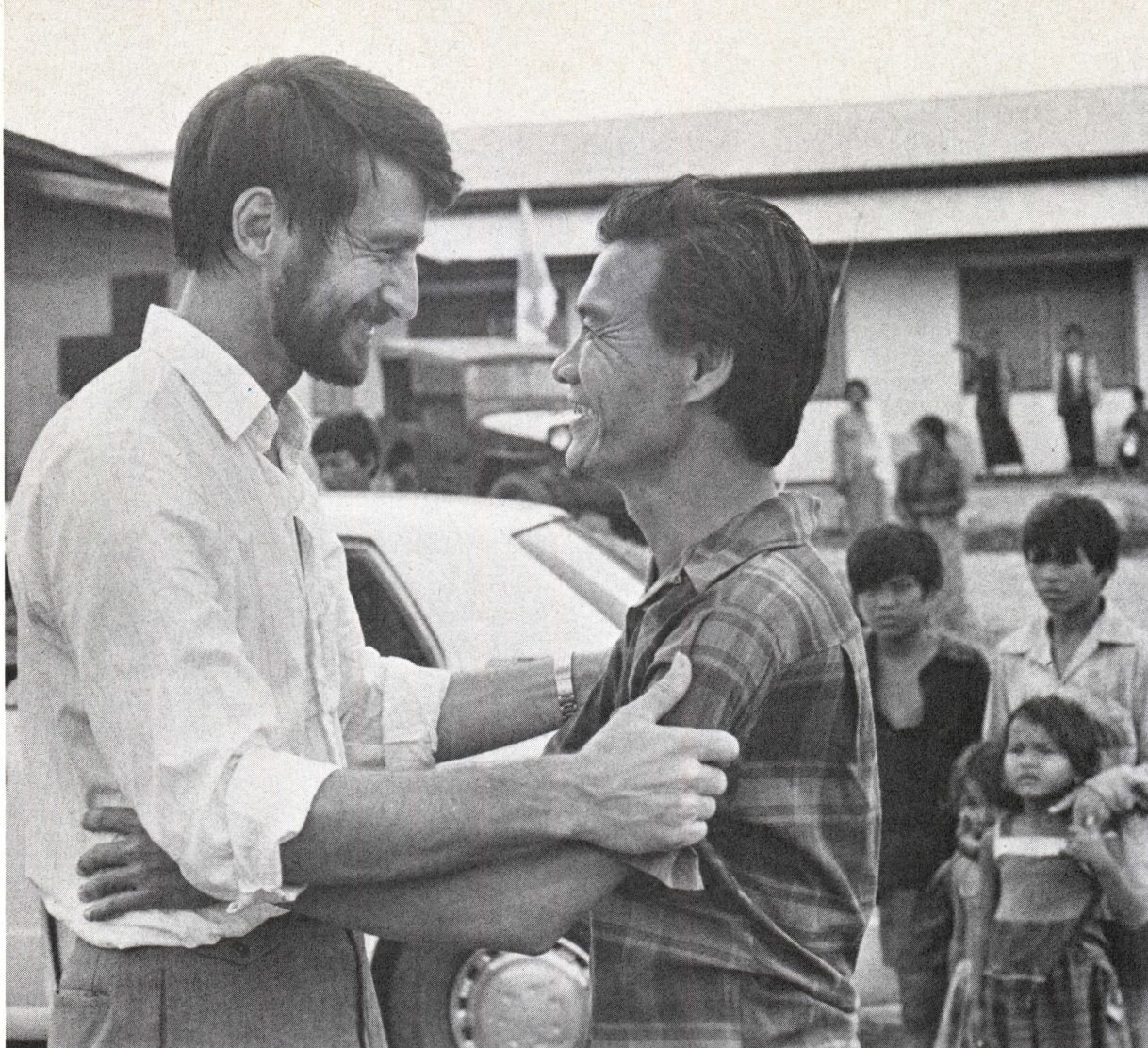
While Joffe, Menges and Puttnam were hard at work recreating the story of the bond between American and Asian journalists, Sydney Schanberg was

enthusiastic about the production's versimilitude. "Although some dramatic license has been taken, it's not very much. *The Killing Fields* really is mine and Pran's story, as it happened. It's a truthful film. Although it's not a documentary," Schanberg said, "I think you realize five or ten minutes into the movie that what Roland has recreated is a real emotional truth. And there are physical places and scenes that have been re-created, from photographs, in eerie detail. Those who have been to Cambodia will swear that they are again seeing the same street or hospital or hotel that was in Phnom Penh. But it's not – it's probably in Bangkok. Roland did an uncanny job of duplicating an actual environment."

"I hadn't been to Cambodia before," said Chris Menges, "but for me the *instinct* of how the actual physical locations felt was the most important thing to capture. And re-creating the environment of Cambodia was a great thing to participate in because it was created in a totally different place and time. That was

The numerous explosions were the responsibility of special effects director Fred Cramer.





Waterston and Haing S. Ngor, the Cambodian doctor whose own experiences at the hands of the Khmer Rouge were his only training for his debut as an actor.

very exciting. Roy Walker (production designer) did an absolutely incredible job. He found a look for the film that was real and emotionally telling. For instance, the Khmer Rouge work camps in the film were very meticulously recreated, based on a Yugoslav film crew's footage, drawings, pictures and firsthand reports. Roy Walker also drew on Haing Ngor's firsthand experiences, as well as the experiences of an interesting man named Mo Leng, a fisherman who had been confined in such a camp and lost all his family."

However much Menges enjoyed the authenticity of *The Killing Fields*, certain factors peculiar to Thailand caused the cameraman problems. "Apart from the heat," Menges explained, "the humidity began to deteriorate the film stock. It had to be processed

as quickly as possible. Everything had to be shipped to England and then back to Bangkok. Customs was always delaying things as well. So viewing dailies was an erratic affair, at best.

"Throughout *The Killing Fields*, we were using the last of Kodak's 5393 as well as 5347 for our exterior scenes. But don't forget we were shooting in the monsoon season, which made lighting levels low and erratic at best. The most important thing when I'm exposing is that every shot take in the whole dynamic range. Which is why I hope 5394 gets a bit better than it is. I do feel myself that 94, in over- and underexposure, is less tolerant than some of the older stocks.

"For instance, when I did *Opium Warlords*, we didn't have

half that footage developed which was shot on the old 47 in 16mm, for over a year. We had about 50 reels to look after. We tried to keep them in cool caves, which didn't often happen. So we kept them in plastic boxes, often on the backs of mules and even less cool places. But then when we finally processed that footage – this was a year later, remember – it all came out perfectly!"

As with all other aspects of the production, Joffe soon let Menges know that he had specific ideas relating to the lighting used on the film. "Roland didn't want *The Killing Fields* to look glamorous, so I tried to light it as if I were in Burma or Vietnam. In those situations where there was an immense amount of suffering, you're sort of mentally pushed



Capture A Crescendo

*With Agfa-Gevaert
Optical Sound
Recording Film 258*

From the barely audible murmur of a swell, to the final roar of the surf as it crashes majestically against the shore! Now you can capture the full range of its crescendo with the ultimate fidelity in sound, on Agfa-Gevaert Optical Sound Recording Film 258.

258's ultra-fine grain, high contrast, and superior definition continue the tradition of excellence and professional quality you demand — and receive from Agfa-Gevaert. It's the state of the art in optical sound recording film.

One demonstration of Agfa 258 will convince you it's the *new wave* in optical sound recording film.

AGFA-GEVAERT, INC.

Motion Picture Products Division

275 North St., Teterboro, NJ 07608 (201) 288-4100 (212) 563-5500

1801 Century Park East, Los Angeles, CA 90067 (213) 552-9622

1633 Old Bayshore Hwy., Burlingame, CA 94010 (415) 692-2432

PHOTO IMPORTING AGENCIES, LTD.

69 Viceroy Rd., Concord, Ontario L4K 1E7, Canada (416) 667-0700

AGFA-GEVAERT 



Roland Joffe and Chris Menges on location for *The Killing Fields*.

into a sort of atmospheric claustrophobia anyhow. So I lit the film to follow this emotion.

"Interestingly enough, in the last half of the film, while the tension is mounting, we are almost always out of doors against a backdrop of hills, forests and fields. The contrast between this expansive landscape and claustrophobic interior drama is quite remarkable.

"I must say that I was continually faced with lighting problems," Menges continued. "In Thailand many of the buildings are more modern, to keep out the sunshine. They have big concrete edges jutting out. So it was quite a chore setting up indoors in these dark buildings and trying to maintain a realistic appearance – and not really having enough lamps to do it. Plus, as I've said,

we were shooting during the monsoon season. So it was almost impossible to get any light at any of the exterior locations during the monsoon. I'd often be opening up to f2 or f2.5 during the middle of the day in Phuket. Our biggest lighting problem, always, was in maintaining a workable aperture.

"But then again, I had a superb crew. The camera operation by Mike was excellent, the focus pulling – which was done under the most arduous conditions you can imagine – was remarkable, and my gaffer Peter worked miracles. Then again, the entire crew of *The Killing Fields*, no matter what department, was fighting for something special on this film."

Two of the departments making major contributions to the film were those concerned with stunts and floor effects. For example, to assemble a convincing "army" of Lon Nol and Khmer Rouge soldiers stunt supervisor Terry Forrestal culled through 250 hopeful extras before finally selecting 17 young men and 30 young women between the ages of eleven and twenty-two for the parts. All of Forrestal's "troops" had extensive backgrounds in Thai boxing or gymnastics. To train them for their roles, Forrestal drilled the extras in basic weaponry, including learning how to handle the Russian AK-47, the American M-16, the RPG rocket launcher and the M-60 machine gun. These "soldiers" also underwent intensive basic military tactical drills, with the end result of all this being that not a single member of Forrestal's army was injured during filming.

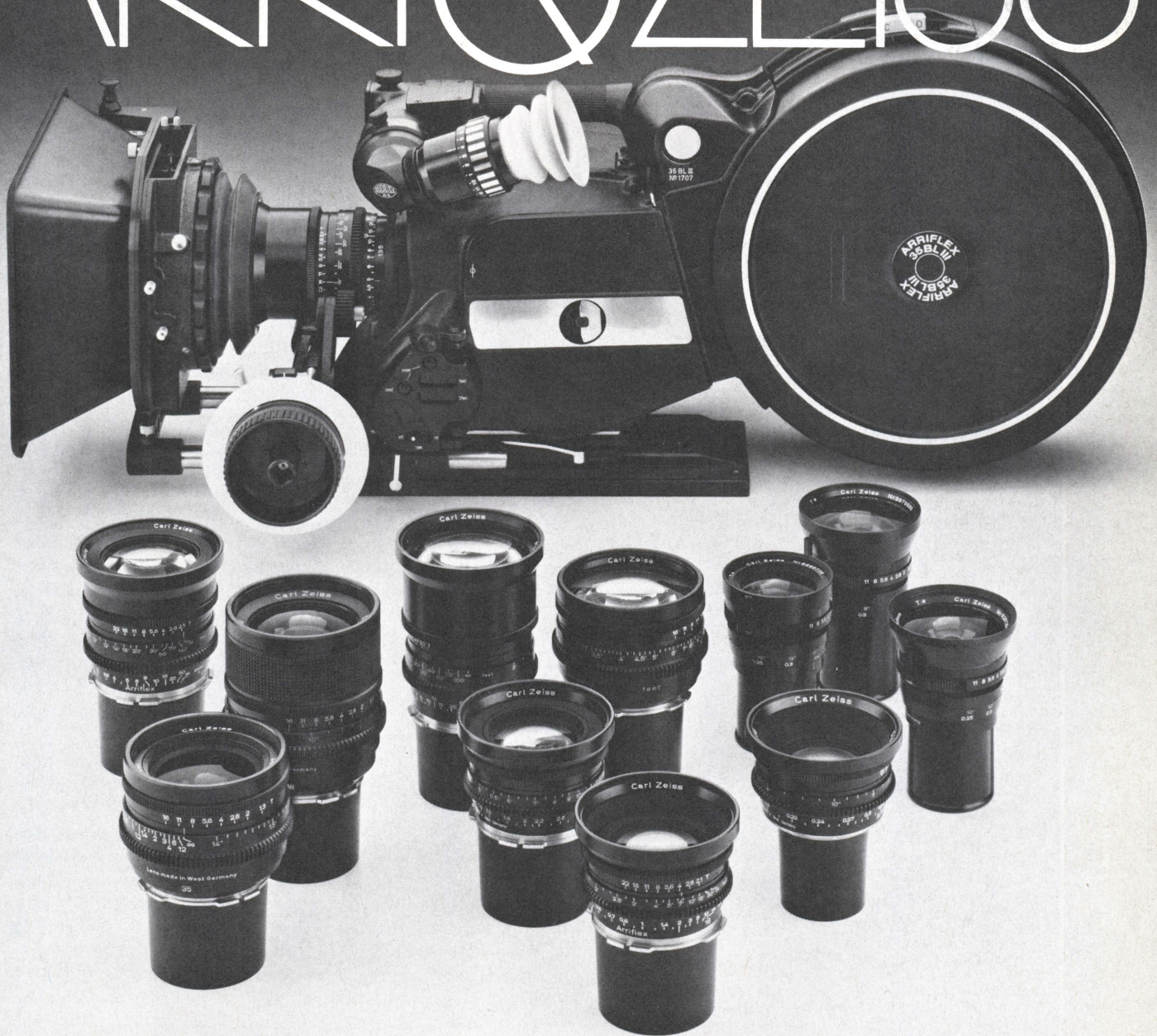
Special effects director Fred Cramer also found himself actively involved with the production. Among his other responsibilities were the burning down of an old Thai brewery on the banks of the Chao Praya River in Bangkok to simulate the destruction of a Phnom Penh oil refinery.

Cramer also created a bombsite at Neak Luong, where four large holes were dug for bomb craters and real buildings put up around the hole, which were then burned down to simulate the destruction. At this site a 1/30th scale model of a ruined Thai temple was also constructed, complete with a large statue of Buddha made of foam plastic within the ruin. "One morning we came out to this site," Menges remembered, "and we found that someone had put a garland of flowers around that statue's neck, a local custom."

One of Cramer's more difficult assignments concerned the rigging of an uncomfortably realistic effect used for that moment when Pran, facing starvation under the brutal conditions of a Khmer Rouge work camp, surreptitiously slips into a corral and drinks the fresh blood from a cow that he has cut open with a razor blade. "No animals were harmed while we were making *The Killing Fields*, although we did buy a dead dog from a veterinarian to use as a prop. As for that cow sequence," Joffe said, "we draped the skin of a dead cow over a live one, which was then held in place by a rope that was tied around the cow's neck. Fred laid a blood bag in under that small area where Haing made his razor cut. So when he cut through the dead skin and into the bag, Haing just sucked out the fluid. The cow never felt a thing."

Cramer's most chilling effect, however, occurs during Pran's lonely march to freedom. Having escaped the work camp, the Cambodian stumbles into a mass grave littered with the bones of thousands of people – the killing fields of the film's title. "I have a theory that an audience's eye is always focused on the faces on a screen, almost to the exclusion of everything else," explained Joffe. "People, I feel, are the center of a scene. Now the moment where Haing falls into the pit of bones is an example of this theory. The bones and bodies are already in

ARRI & ZEISS



The sharpest combination in cinematography.

ZEISS has built an extraordinary series of new lenses—exclusively for ARRI and to their precise specifications.

In the ARRI/ZEISS approach, lenses are designed specifically for the full frame 35mm motion picture format, for optimum performance and common, maximum T-stops. Each lens is individually assembled from selected groups of elements for maximum cancellation of focal length errors. Zeiss-developed rare earth coatings improve flare control, color correction is absolutely matched and contrast and

resolution are identical from lens to lens.

ARRI's short flange focal camera design allows the use of "relaxed" retrofocus designs for highly corrected, nearly distortion-free wide angle lenses. And the absolutely rigid, dimensionally stable ARRI film plane assures perfect back focus even in extreme temperatures with wide open lenses.

Cameras and lenses designed together as a working system for optimum performance—ARRI and ZEISS.

ARRI
ARRIFLEX CORPORATION

ARRIFLEX Corporation, 500 Route 303, Blauvelt, N.Y. 10913 (914) 353-1400 or 600 N. Victory Blvd., Burbank, Ca. 91502 (818) 841-7070.

Helix keeps you in the picture...

NEW MOVIE EQUIPMENT

Angenieux 17-68mm f2.2 w/viewfinder "C" mount	995
Angenieux 5.9 f1.8 "C" mount	1800
Beaulieu 4008 ZM-4 w/6-70 Schneider	810
Beaulieu 5008 MS w/6-70 Schneider	1120
Beaulieu R16B-PZ Auto w/Angenieux 17-68mm f2.2	1795
Beaulieu 200' Magazine	405
Beaulieu 4008ZM4 w/Optivaron 6-70mm f1.4 cond. 2	712
Beaulieu 5008MS w/Optivaron 6-70mm f1.4 cond. 2	895
Beaulieu 3008MS w/Optivaron 8-50mm f1.4	970
Beaulieu 30MA Charger	62
Bolex EBM body only	2295
Bolex EBM w/16-100mm POE pkg	2795
Bolex Rex-5 body only	1995
Canon 12-120 macro Arri. bay mt.	2195
Vario Switar 16-100 POE bay mt	1495
Vario Switar 17-85 compact bay mt	425
Vario Switar 12.5-100mm bay mt	1795

NEW VIDEO EQUIPMENT

Everex GP-41-D (limited quantities)	325
Everex GP-8D (limited quantities)	375
Everex GP-6M (limited quantities)	399
JVC GX-N7U	729
JVC GX-N4U	529
JVC GZ-S3U	715
JVC TM-P3U 3" color monitor	299
Sony HVC-2800	975

USED MOVIE EQUIPMENT

Bauer P-6 Synchron 16mm Proj. (VG)	1595
Bell & Howell Ext. Speaker (F)	50
Bell & Howell Ex. Spkr. w/amp. (F)	95
Buhl 15.9mm projection lens f/B&H (VG)	92
Bolex Matte Box w/Mattes (G)	195
Bolex Unimotor w/AC Adapter (G)	195
Bolex Torque Motor (VG)	300
Eclair ACL w/12-120mm Ang. & 400 mag. (VG)	5995
Arriflex 165B body only (VG)	1995
Arriflex 400 mag. for BL (G)	595
Eclair 400 mag. for ACL (G)	1295
Cine 60 Blimp for Arri 35-2C (VG)	1995
Beaulieu 5008.5 w/6-80mm Schneider (VG)	695
Beaulieu 4008 ZM-2 w/6-80mm Schneider (VG)	625
Beaulieu R-16 mono body (VG)	895
Beaulieu R-16 w/17-68mm Angenieux (VG)	1165
Beaulieu 200' Magazine (VG)	195
Angenieux 12-120mm f2.2 Arri bay mount (NM)	1495
Bolex Rex-5 body only (VG)	995
Angenieux 12-120 f2.2 RX mt (NM)	1595
Vario Switar 16-100mm POE f1.9 bay mount (VG)	795
Angenieux 12-120mm f2.8 w/sidefinder, C mount (VG)	1495
Switar 26mm 1.1 Macro RX mt (VG)	825
Kodak AV126TR Pageant projector (VG)	595
Kodak AV12M6 Pageant projector opt.-mag.	950
Nagra 4.2 (VG)	4250
Moviola 4-gang synchronizer (VG)	225
Arriflex 35 IICV w/25-250mm Angenieux T3.5 package (VG)	9500
Maier Hancock 816 Hot Splicer (VG)	450
Colortran Dolly (G)	4995
Kinoptik 5.7mm T2.3, C mt (VG)	950
Samenco Interval Timer w/base for Bolex (G)	450
O'Connor, 100 fluid tripod head with Mitchell base, A & J carrying case and pan handle (VG)	1950

(NM=Near Mint, VG=Very Good, G=Good)

All prices are subject to change without notice and do not include shipping.

HELIX®

325 West Huron Street, Chicago, Illinois 60610
312/944-4400

that shot, but it is not until the moment that Haing falls into the pit and your eye follows him down that you *notice* the bones. This is interesting, because up until then you've focused on Haing's face. As a matter of fact, if you think back to your childhood ... the first thing a baby focuses on are people's faces. And no matter how big a scene is, I always think it's worth working out so that its focus is a face.

"The location for this mass grave was a salt flat with withered trees that Roy Walker and I found in southern Thailand," continued Joffe. "We were so taken with how these tree limbs stood against the sky like dry bones that we knew we'd found our set. Incidentally, there were 250 yards of those bones in those scenes, which were mostly manufactured out of plastic and latex by a local Thai doctor and some of his medical students."

Certainly Cramer's most ongoing effects assignment was the production of the numerous explosions that punctuate the entire length of the film. "We had a lot of elaborate tracking shots involving explosions that just wouldn't have worked without Fred," said Chris Menges. "He's the only special effects guy I've ever met whose explosions looked *dirty*, like the stuff I saw in Burma and Vietnam. Plus his explosions were pretty safe, which gave us a lot of freedom."

"These tracking shots," Menges continued, "are the shots we cameramen all dream about. When you've managed to get all of a scene in one fluid, moving take, it's such an enriching experience for the crew and the actors and the audience. It can give both pace and a sense of place, can show and make believable what the camera is trying to do. It's the kind of thing Bertolucci does, and Raoul Coutard does, except that Roland likes to track much more, with the background counteracting his foreground ideas. That's a very biting method to apply to a scene."

"All the tracking shots in *The Killing Fields* were Roland's inspiration. He likes that kind of excitement and movement. Of course, in this type of work you're not working with a steady camera, so you try to keep your lens fairly long so that you're absolutely sharp and defined about focus and exposure; you have fewer problems this way. This is also the type of photography that lets you look for mannerisms in the people on the screen. Now throughout *The Killing Fields* if I could just use prime lenses I would, and then I would go for the Cooke lenses. If I could I'd also try to make sure that I was shooting at f4.5 or f5.6. But many times this was impossible, and I had to go with a zoom. Particularly when I was dealing with a kind of blocking where I wasn't quite sure where the actors were going to go or wanted to go. With some directors you discuss your shot and you understand it immediately, and you know where to put your lights. With other directors, although they tell you where they're going, you always have the sneaking suspicion that you mustn't crowd them too much in case they want to go somewhere else. And that's what it's like working with Roland Joffe. So you have to be very sharp."

"But *The Killing Fields* is totally obligated to Roland's vision. Although the crew gave themselves totally to this film - I've never seen a crew work harder, in fact - the leader was most definitely Roland Joffe," says Menges. ■

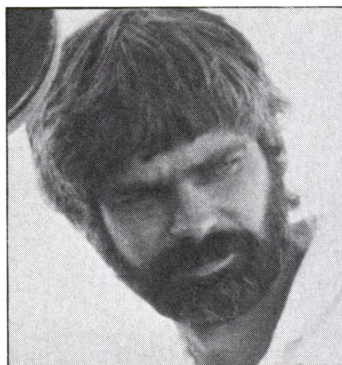
Congratulations Academy Nominees

ERNEST DAY, B.S.C.



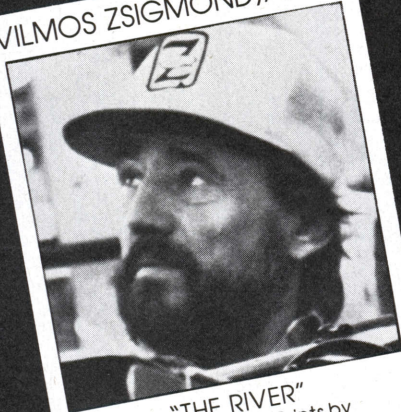
"A PASSAGE TO INDIA"
Processing and European Prints by
Technicolor®

CALEB DESCHANEL, A.S.C.

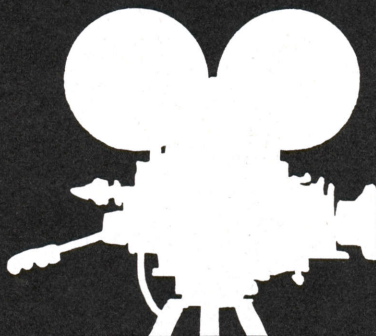


"THE NATURAL"
Prints by **Technicolor®**

VILMOS ZSIGMOND, A.S.C.



"THE RIVER"
Processing and Prints by
Technicolor®

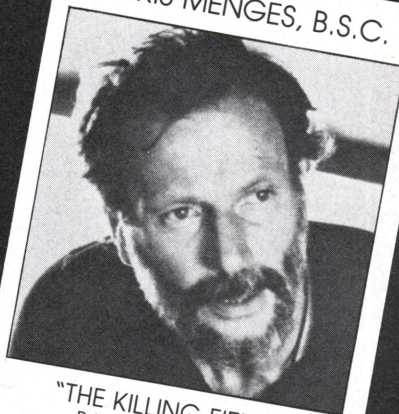


MIROSLAV ONDRICEK



"AMADEUS"
Prints by **Technicolor®**

CHRIS MENGES, B.S.C.



"THE KILLING FIELDS"
Prints by **Technicolor®**

Best Achievement in Cinematography



Technicolor®

Hollywood ■ London ■ Rome ■ New York

Wait until you see our version of

Nice Aaton engineers, they came up with what they later advertised as the crispest viewfinder ever made in a 16 mm camera.

From their Super 16 supremacy for 35 mm blow-up, they inferred that their image steadiness was the best in 16.

One of their claims to fame was the shape they gave to their camera: the “cat-on-the-shoulder syndrome”.

Because Peking Newsreel and Documentary Studios made a single order of 40 cameras to shoot films in the dust storms of China, they boasted of its rugged mechanical design and unprecedented reliability.

It is admitted that they introduced Clear Time Recording to the film industry, and that they invented Film Data Track to record SMPTE time code on film (they even granted a licence to Panavision for FDT).

But these wizards of mechanical and optical design were not fast enough to satisfy cameramen's endless quests, though electronics technology would have provided an easy answer to what the cameramen were asking for.

the perfect 16 mm camera

So. Having retained their recognized contribution to camera design, we are now perfecting a new camera, with really low power electronics instead of their power-hungry old microprocessors.

We are also perfecting an LCD display to measure various parameters that are necessary to the cameraman (battery voltage while camera is running, ASA setting, real frame rate, remaining footage in three different magazines).

Furthermore, we have found a simple solution not only to warn the cameraman before the end of the roll, but also when there is no more film, to prevent him from shooting in a quiet vacuum.

And because we are not so bad in mechanical design either, we have designed a magnetic coupling for the magazine to protect the camera mechanism and simplify their awkward magazine drive.

Above all, we have improved on their noise level; we have even discovered how to run their highly steady claw movement to 96 frames per second.

If you are thinking about buying a 16 mm camera, refrain until you see our alternative at London Film 85.

May 20-23

Don't Miss . . .

1985's exciting

11th L.A. Professional

VIDEOSHOW

The major Western conference and exposition on:

Video for business and industry, independent production, education, government, military, health care, educational and public broadcasting.

More than 40 workshops and seminars on:

- Video for sales and management training, computer interactivity, teleconferencing, facility management.
- Program production, editing, special effects, lighting, maintenance, and much more.

Conference sessions on:

- Component video (Betacam, Recam) — why you should jump aboard.
- Making it successfully as a Video Independent.

And . . .

More than 65,000 square feet of exhibits of the products and services of more than 150 companies.



**Long Beach
Convention Center**

Exhibit Hours:

Tuesday, May 21:
11:00 A.M. to 7:00 P.M.
Wednesday, May 22:
10:00 A.M. to 6:00 P.M.
Thursday, May 23:
10:00 A.M. to 3:30 P.M.

Mail to:
The L.A. Professional Videoshow
51 Sugar Hollow Road
Danbury, CT 06810

or Call: **203/743-2120**

☐ Please send your free brochure about the seminars, workshops and exhibits at the L.A. PROFESSIONAL VIDEOSHOW, May 20-23, 1985.

☐ Please contact me about exhibiting my product or service.

Name _____

Title _____

Company/Organization _____

Street _____

City _____ State _____ Zip _____

Phone _____

Clip and mail this coupon for full details.

AC

Vilmos Zsigmond, ASC, and

The River

Bob Fisher

The River starts with a drop of rain, which turns into a sprinkle, and finally a torrent. We see the Garveys, Tom and Mae (played respectively by Mel Gibson and Sissy Spacek) and their son Lewis and daughter Beth fight back when the river floods and threatens to wash their farm away.

Suddenly, it becomes a desperate, life-threatening struggle. The Garveys survive, but barely. By now, we have an image of the main players in this movie, and significant insights into their character. We also know that their battle with the river isn't going to be easily won.

All of this happens within three to four minutes, and so far, there hasn't been a word of dialogue. "I was lucky," says Vilmos Zsigmond, ASC. "Mark Rydell is a very visually oriented director. He believes in telling stories with images, and light and shadows. Dialogue should be like music. You should be able to follow the story even if the volume is turned down."

There is a scene early in the film where Mae is tenderly nursing a sick cow. The setting is a barn, where shafts of light pour through spaces in a wall made of wooden slats. The backlight gives the scene a sense of depth and tone, and the shadows from the slats add texture. It feels like a barn instead of a set. Mae promises her worried daughter Beth that "Jessica" (the cow) is going to be all right because she is giving the cow strong medicine. The



scene is full of hope. Soon though, Mae is faced with telling the family that her best efforts have failed. Tom and the children have come home from a softball game, where Tom has won a small, personal victory. The children are excitedly looking for their mother to share the news. They enter the barn just in time to see Jessica die. A tearful Mae says it's her fault. She thought that she could save Jessica without calling the vet ("We already owe him so much money.") The backlight isolates Mae in her anguish, but it is subtle and natural.

There is a reverse shot, and the camera looks at the family through Mae's eyes. They are painted in alternate stripes of light

and shadow as they walk toward her. It's not the biggest moment in *The River* and it was far from the most trying scene to shoot. But, Zsigmond counts it among his favorite scenes. Somehow, the subtle use of light and shadows makes the scene more real without intruding on the story. It also tells you a lot about Zsigmond, who earned an Academy Award nomination for cinematography for "The River."

The ability to lend something to a film which makes the audience accept the characters and story as their own is a thread which runs through the fabric of most of his work. However, people who have worked with Zsigmond will tell you his real talent is

Zsigmond and crew on location for The River.



A moment from Zsigmond's favorite scene in the film with the effect of light coming through the barn walls.

The flood was created with the help of a temporary dam and a pit the size of a football field.



an ability to get inside the director's head and "see" the story the way the director does – and then to make it happen by painting with light and shadows, and with composition, choice and use of lens and, occasionally, filters. Where does this kind of talent come from? Is it an art or a craft, or a blending of the two? These are among the questions put to Zsigmond as he contemplated what it means to have your fellow cinematographers say that a piece of your work is among the best that anyone has done in a given year.

The River is the third picture from Zsigmond's body of work which has been singled out by his peers for the consideration of the members of the Academy of Motion Picture Arts and Sciences. Zsigmond won an Oscar for *Close Encounters of the Third Kind*, and was nominated in 1979 for *The*

Deer Hunter (which also won the equivalent of the Academy Award in England), which he counted as his best picture at that point in his career. Like most cinematographers, he'll tell you that the nomination is what is really meaningful because the selection is made by his peers. However, he also remembers the electricity of hearing his name called and marching up the steps to receive his Oscar for *Close Encounters*. With some 80 million people watching, he thanked his teachers at the state film school in Hungary, where Zsigmond first started to hone the tools of his profession. He went to that school for four years, six days a week, often working 14 hours a day. "There is nothing comparable to it here," he says.

Zsigmond tries to give something back by almost always having an American Film Institute intern by his side on pictures, and

by speaking to students wherever and whenever he can. "We all owe something to the next generation," he says. "We owe it to the people who taught us."

There is a scene in *The River* where Mae is working alone in the cornfields while Tom is working in a foundry, trying to make enough money to keep the family going until the harvest. He has been away for awhile. One of the kids comes running to tell her, "Daddy is on the phone." When he read the script with Rydell, Zsigmond immediately envisioned how he could shoot that sequence with a 200-foot dolly shot and a long lens as Mae ran through the fields. He saw it in his head as he read the words on paper. Usually, however, he likes to see the setting and the natural light before he envisions what a scene should look like. For example, he didn't know how he was going to light the various barn scenes until he saw them. In the scenes where Mae is nursing Jessica, and the cow dies, there were approximately 10 shots, and only 10 minutes of sunlight. He used the sun to backlight Mae. However, he also created backlight when the sun was gone by placing arcs outside the slatted wall. And, he created the illusion of shadows coming from the slats by placing strips of wood over the lights used on the reverse shot. Part of Zsigmond's talent is original equipment which was given to him at birth. You can't learn to see images in your head the way that he does unless you are born with that gift. It would be like trying to teach someone who dreams in black-and-white to see color in his sleep instead. And, for certain, part of the talent is molded by life's experiences. In Zsigmond's case, part of his view of reality had to be permanently etched in his mind when Russian tanks rolled into his native Hungary in 1955. He and his friend Laszlo Kovacs, ASC, got out during the final days of the short-lived revolution with 12,000 feet of documentary footage about the Russian incursion. That's reality.

ARRILITES IN COST-SAVING KITS

Convenient, complete, everything you need in an easy-to-carry fitted case. ARRILITES set a new standard of excellence in portable lighting—ARRI excellence. And they're competitively priced, setting a new standard of value, too. ARRILITE Kits are now in stock.

See them at your Arriflex Lighting Dealer or contact Arriflex Corporation:

500 Route 303, Blauvelt, N.Y. 10913 (914) 353-1400 or

600 North Victory Blvd., Burbank, CA. 91502 (818) 841-7070.

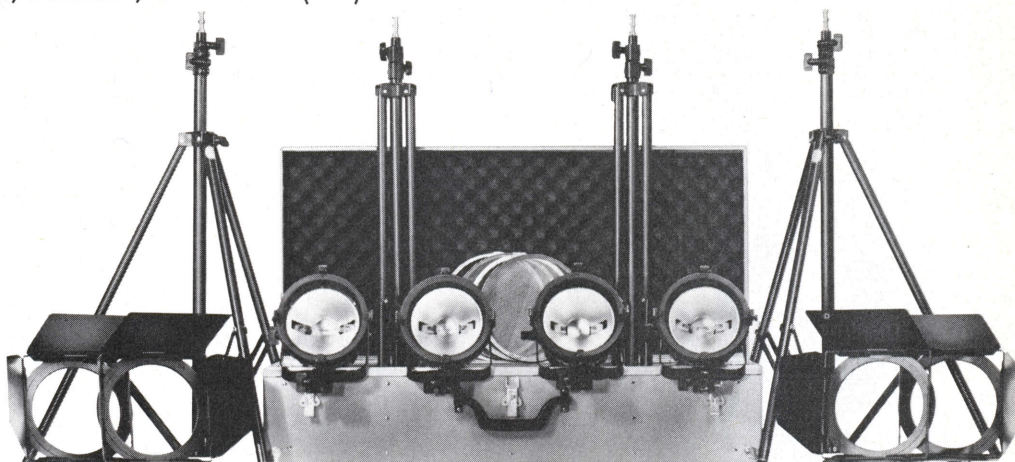
ARRILITE

ARRILITE 1000/4 Kit

- 4 ARRILITE 1000
- 4 Four Leaf Barndoor
- 2 Full Single Scrim
- 2 Half Single Scrim
- 4 AS-2 Stand
- 4 DXW 1000W Lamp
- 1 Case
(36½" x 16¼" x 8¾")

ARRILITE 650 and
ARRILITE 2000 Kits are
also available.

© 1984 ARRIFLEX CORPORATION

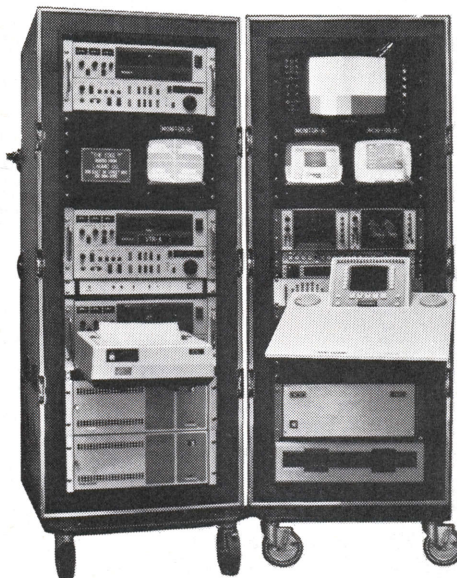


LAUMIC HAS THE EDGE IN VIDEO EDITING EQUIPMENT

Now you can

RENT

a CMX Portable
3 machine system
from Laumic Company



"THE EDGE"™ computer assisted editing system with internal memory, re-edit, list ripple, time code/pulse count editing, auto assembly, floppy disk, printer, GPI and built-in A/V dissolver; interfaced with ADDA's TWIN TBC and DIGITAL EFFECTS SWITCHER; WAVEFORM & VECTORSCOPE; 3 SONY 5850's SYNC GEN.; and VIDEO & AUDIO MONITORS.

It's yours for short or long term rental. Call today.

SALES, SERVICE AND RENTALS OF JVC, SONY, HITACHI.
INDUSTRIAL/BROADCAST VIDEO EQUIPMENT SYSTEMS
DESIGNED AND INSTALLED.

LAUMIC COMPANY, INC.

306 EAST 39th STREET, NEW YORK, N.Y. 10016 • TEL. (212) 889-3300

Isn't it nice to know we'll be around to service
your equipment...**AFTER THE DEAL IS CLOSED?**™

T-A-H-O-E

FILM & VIDEO WORKSHOPS '85
THE LEADER IN PROFESSIONAL WORKSHOPS

DALLAS SEMINAR MAY 18-19

Cinematography & Lighting
Film Directing

Instructors To Be Announced

TAHOE / SQUAW VALLEY JULY 21-27

Cinematography & Lighting I
Film Directing I

Instructors To Be Announced

SEPT. 8-14

Cinematography & Lighting II

Instructor To Be Announced

SEPT. 15-21

Magic Of The Movies: Special Effects
Steadicam & Panaglide Workshop

Instructors To Be Announced

HOLLYWOOD, CALIFORNIA

Video Editing I & II
Video Production

Dates & Instructors To Be Announced

LAGUNA BEACH, CA. NOV. 10-16

Film Directing II
Cinematography & Lighting II

Instructors To Be Announced

"WHERE PROFESSIONALS ADVANCE
AND REFINE THEIR CAREERS"

SEND \$2.00 FOR POSTER/BROCHURE TO
P.O. BOX 969AC TRUCKEE, CA. 95734
CALL OR WRITE FOR INFO (916) 587-4500

This Publication is Available in

MICROFORM

For Complete Information WRITE:

University Microfilms International

Dept. F.A., 300 North Zeeb Road, Ann Arbor, MI 48106 U.S.A.

Dept. F.A., 18 Bedford Row, London, WC1R 4EJ England

SHOOT LATER. ASK QUESTIONS FIRST

A good film—one with a real sense of spontaneity—can give you the impression it was shot on impulse. No way. Chances are, every frame is the product of a carefully reasoned choice of lighting equipment.

meticulous planning. Planning that includes a carefully reasoned choice of lighting equipment.

LOOK TO LEE AMERICA This is why we suggest that, well before you look for locations, you look into what Lee America has to offer in terms of rentals...keeping in mind that we're backed by 18,000 square feet of inventory here and 20 countries globally—the most comprehensive stock of lighting products in the world. And be sure to ask us any questions you may have about your shoot. The tougher the better.

THE RIGHT ANSWERS BY THE RIGHT PEOPLE We can give you the right answers because our staff has been right in the thick of the cinematic action for decades. The top people at Lee America have spent many years in the industry gaining vital expertise in lighting, film/tape production, and the rental of equipment. We understand your problems because all along we've been solving those same kinds of problems ourselves. Time after time after time. Now, isn't it time you shot some questions at Lee—before you consider shooting a foot of film...?



LEE LIGHTING AMERICA LTD.
534 WEST 25 ST., N.Y., N.Y. 10001
(212) 691-1910

Reality is also living in New York City, learning English word-by-word, and paying the rent by selling portraits of children door-to-door, or processing color film at a laboratory. It was hardly what his teachers at the state film school in Hungary had in mind for Zsigmond. But, all the while he kept his wildest dream alive; the one where he gets to go to Hollywood to make movies. It wasn't the idea of working in Hollywood that kept him going. It was the idea of helping to make movies that people will remember.

For people like Zsigmond, moviemaking is a collaborative art, not just an individual array of stunning images. Just a summary glance at some of his credits tell you that much—*Scarecrow*, *The Deer Hunter*, *Close Encounters*, *McCabe and Mrs. Miller*, *The Long Goodbye*, *Deliverance*, *Cinderella Liberty*, *Sugarland Express*, *The Rose and Heaven's Gate* to name his personal favorites. Now, put *The River* at the head of that list. "I think it's my best work yet," says Zsigmond, who adds, "You have to feel that way to be willing to work that hard." Think of the common denominators in these and other Zsigmond films, and a familiar signature is always present. There is always a dimension of depth in the characters that he helps to portrait. They are real, and they show a wide range of feelings and sharply defined personality traits. It's no accident. That's his motivation for doing the hard work that goes with the kinds of films that he helps to make. His criteria for shooting a film is a viable story, a good script and real characters. Sure, he wishes that *The River* would achieve a higher degree of commercial success. He believes that the producers (for their faith) and the cast and crew (for their efforts) deserve as much. However, he vows never to make a purely commercial film.

No one gets to Hollywood without some element of luck, and Zsigmond is no exception. Back in the late 1950s, when

the Soviets launched Sputnik, it motivated great interest in boosting the quality of education in the United States. This funded a booming educational film industry, which created of opportunity for people like Zsigmond. He made the most of that chance, quickly making a transition from educational, medical and documentary films to low-budget entertainment features. Probably he would have found another way, but it is one of those things which we will never know.

"It was an exciting period," he remembers. People were experimenting with new technology and ideas. Zsigmond made half a dozen "experimental" films, all on a deferment basis. If nothing else, it was a rich experience ("I never saw a penny," he says.) That's when the advertising industry discovered him. Zsigmond was in the front wave of the "new wave" during the early 1960s, which shaped a new style of cinematography while shooting television commercials. "It was a great chance to experiment with soft lights, long lenses and filters," he remembers. However, it was also more than a soft look; it was a new kind of discipline. Every commercial that he helped to craft was like a 30- or 60-second movie where every frame counted. The smallest nuances, like a subtle shaft of light or a faint shadow, became more important.

In 1971 his fellow expatriate, Kovacs, was set to shoot *The Hired Hand*, but he was involved with another film when it was supposed to start. He recommended his friend, Zsigmond, and that is when the dream came true. Zsigmond says that he has changed with the times. For example, as new technology has provided more light-sensitive films and other tools, he has learned to work with less light, and to exercise the freedom that can bring. However, even back in his school days, light was never something which he just used for exposure. There always has to be a reason for light, he believes. "Even if an audience doesn't know something

LONDON INTERNATIONAL FILM SCHOOL



Hollywood, Athens, Tokyo, Lagos, Rio, Tel-Aviv, Reykjavik, Sydney, Toronto, Geneva, Hong Kong, London – just some of the centres worldwide where our graduates are making films.

Students from over thirty different countries come to the heart of London's West End to take our two year Diploma Course. Experienced professionals teach all aspects of film making – covering studio feature and location documentary productions in 16mm and 35mm.

Teaching of scriptwriting, direction, camerawork, sound recording, editing etc. ensures a high degree of professionalism. And it must do – Governments, T.V. Networks and Educational Foundations have been sending personnel to us for training for over twenty years.

This intensive Course, demanding hard work and commitment, produces over twenty-five films each term – many students working on more than one production.

There are fresh intakes in January, April and September.

**Contact: The Administrator, London International Film School, Department AC2
24 Shelton Street, London WC2H 9HP, England. Telephone (London) 01-836 0826**

WM-D6 SONY

CRYSTAL SYNC RECORDER

We offer a remanufactured version of the Sony WM-D6C Walkman for use as a location sync recorder. The unit features an internal 60hz or 50hz crystal sync pulse generator, complete resolving capabilities and is available with a full range of options.



A special 59.94hz version allows the same flexibility of double system film sound to now be married with conventional location video production techniques. A unique video resolver provides for transfers between audio cassette and video tape and for sync locked playback in the field.

The Film Group

P.O. Box 9 203-527-2972
Wethersfield, CT 06109 U.S.A.

HiQUALITY OPTICALS

FOUR HEADS ARE BETTER THAN TWO.

NEW 4-HEAD AERIAL PRINTER
TRAVEL MATTE COMPOSITES
NO MATTE LINES
ANY COMBINATION 16/35

BLOWUPS TO 35mm

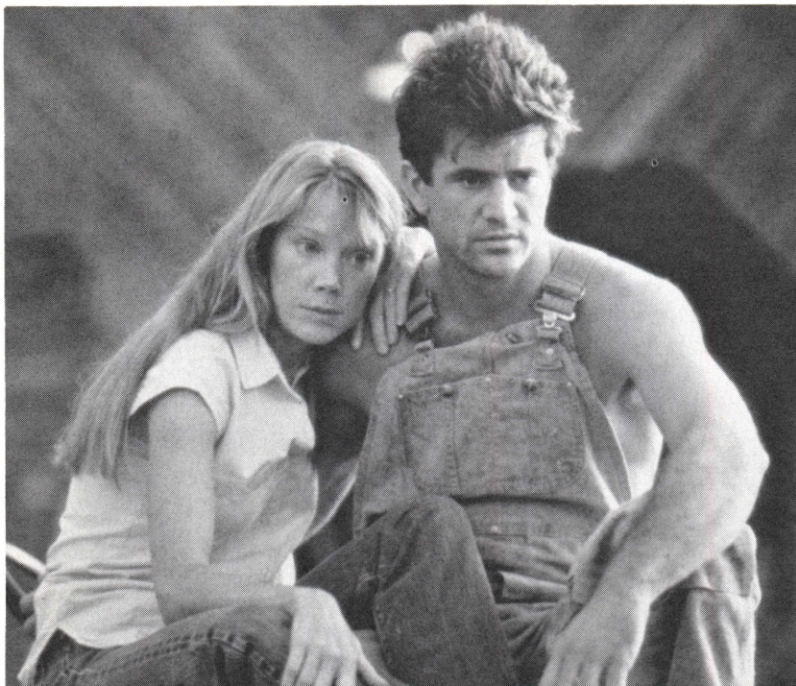
ADDITIVE CORRECTIONS
DIFFUSION LIQUID GATE
PRINTING NIKKOR OPTICS
SUPER 16, TITLES

"We can engineer the effects to solve any problems you've got."

(415) 495-4428

860 Second St.
San Francisco, Ca. 94107

Sissy Spacek and Mel Gibson bathed in backlight in a quiet moment on the farm.



is wrong or out of place, they can sense it," he says. *The River* was shot on both Eastman color negative film 5247 and Eastman color high speed negative film 5294. He used the former for daylight exteriors, including the dramatic river scenes and the cornfields, which were filmed on a farm in Tennessee. "We were lucky," he says. "We started with a summer look, and went to fall just when the leaves were turning colors in Tennessee. Then, we moved further south to Alabama, just when the leaves were turning there."

Zsigmond says that most of the farm look was natural. The air had a wonderful, lush quality which showed up on the emulsion, though he also did some filtering to help achieve the slightly warmer tone that Rydell wanted. The high-speed emulsion was used for all night scenes and interiors. Zsigmond says that the 400-speed film has allowed him to work with available light in many cases, and with smaller units which are easier to hide. "On most of our interiors, we had less light than there is in this room," he gestures. "It would be too bright to shoot here. I used a lot of natural light, and generally just a little bounce light for balance and fill." This has required

some rethinking. "We used to be able to go out and look at a set, and light it by eye," he says. "Now, we use a light meter to make certain that our eye isn't fooling us."

The River is an interesting contrast to *The Deer Hunter*, where the characters in the steel mill were almost heroic, and the photography was stunning. "Our job in 'The Deer Hunter' was to make the characters very manly and real," he says. "You could see in close-ups that it was hard, hot work; however, it wasn't a dehumanizing environment." In *The River*, the foundry contrasted dramatically with the farm that Tom Garvey loved. The foundry scenes were shot in two steel mills near Birmingham, Alabama. There was an active mill, which was only available for several days, and an abandoned plant, where the rest of the footage was shot. It was an interesting challenge, because a foundry can be a beautiful place to shoot – with its red-hot furnaces creating warm tones, and smoke which gives the air a hazy quality. In *The River*, the foundry scenes are brutal. So, Zsigmond avoided the opportunity to shoot beautiful images, and instead, he zeroed in on straining, sweating, dirty

faces – and he used light, shadows and filters to create an icy, cold look for these sequences.

Most recently, Zsigmond has finished shooting *Real Genius*, another film where he made extensive use of the 5294 film emulsion, but in a very different way. "I flashed the film, and I also underdeveloped because it gave the director the look that he wanted," he explains. "Today's films give us much more to work with, but we have to remember that they are tools, and like any other tool they have to be used according to the job," he says. There are times when Zsigmond rates the 5294 film for an exposure index of 200 because it gives him a somewhat sharper, cleaner image. There are times when he underexposes to achieve a particular effect. Zsigmond has also organized a commercial production company, Cinematic Directions. Currently, he is both directing and shooting. "I like the idea of directing because it allows me to control the image from start to finish," he admits. Shooting commercials is still fun for him, and he says that it is still a great way to learn. "Whether I am shooting a commercial or a feature, I learn something every day," he says. "There's always a new problem to solve." Zsigmond shakes his head in wonder, as he realizes that he has lived in the United States longer than he was in his native Hungary. It's just 15 years since he shot *The Hired Hand*.

For people like Zsigmond, the dream never gets old. "I'd really like to direct someday soon," he says. "I'm proud of what I did on *The River*, but it is Mark Rydell's picture – I just helped him." What else? "Well," he answers, "I've never done a really big musical, unless you count *The Rose*. How does he feel about being nominated for an Academy Award again? "I've seen all of the other films," he answers, explaining that he goes to movies as a fan, and to study the work of other cinematographers. "I think every one of them deserves to win." ■

Ernest Day, BSC, and

A PASSAGE TO INDIA

Samir Hachem

A number of open umbrellas are seen (from overhead) moving outside the glass window of a travel agency, under the soft London rain. A young woman enters the agency office and inquires about a trip to India. She does not require a ticket back, she tells the agent. She thinks she'll be staying on, she says. Thus begins the journey into the story of *A Passage to India*, into the heart of another country, and the fate of its enchanting characters.

Frame after meticulous frame, David Lean's movie then unfolds, a most absorbing and tightly constructed yarn, told simply and directly. This is not to say that the imagery of this large and lengthy film is in any way easy. Effortless and smooth, perhaps. Easy, never. With his able and visionary cinematographer, Ernest Day, B.S.C., his production designer John Box, and his very own skills as an editor, Lean has taken out all the stuffy elements which bogged down the classic Forster novel in reverence never-never land, and has layered and enriched its tones and textures with strands of solid cinematic qualities, introducing mysticism, psychology and even mystery.

"I do hate mysteries," says the aforementioned young woman (Judy Davis's Miss Quested) later on in the narrative. "I like mysteries," replies her older companion (Peggy Ashcroft's Mrs. Moore) "but I don't like muddles." Right away, it is made clear that this is one movie mystery that



can boast its lack of clutter, its shunning of muddles.

In fact, this film's visual temper and fabric is so clean it invites you to give yourself over to it, and be hurled into each and every scheme it sets up for you. Somehow the senses know they will be well taken care of, and they are right, of course. One thing that *A Passage to India* is about is perception. It is about how one culture sees another, how a woman looks at a man, how a person looks at his own destiny. It is also about deception.

It is therefore only appropriate that Ernest Day and David Lean have carefully chosen to introduce their characters through a

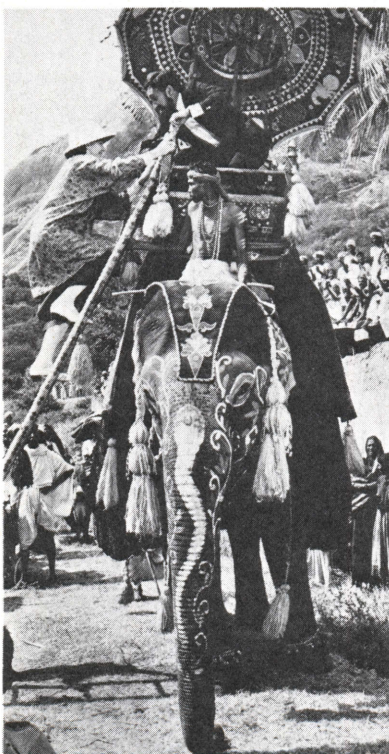
series of doors, windows, glass partitions, and even prison bars. Stylistically, the film uses little artifact and almost no artifice at all to frame its compositions. They are direct and unbeautified. But when guiding its viewer to a new path or a new clue in the spirit of a character or a place, the film compositions acquire a formal and necessary perspective. When we first enter India, we enter it through its bazaar's many tunnels and gates, with Major and Mrs. Callendar, in their impatient horn-honking automobile. It is a rude first impression. The car flies into the tunnels, contaminating their echo with noise, sending dust into the air, and finally, knocking down

Day, Lean and crew on location for *A Passage to India*.



The final leg of the journey to the Marabar caves.

Dr. Aziz (Victor Banerjee) helps Adela Quested (Judy Davis) onto the elephant for their trip to the caves.



two hapless Indian bicycle-riders in front of it. This is the first confrontation the film presents between the country's visitors and its natives, and it is one of friction. (Not coincidentally, the next time a confrontation of this nature is offered – Miss Quested and the monkeys – a bicycle will again be prominently featured. And friction has matured to hostility.)

Ernest Day lights the early Indian scenes, as if using the sun as his only unruly palette. At the train station where Miss Quested is received by her prospective fiance, the screen is filled with dancing shadows that move over the heads and faces, varying the degrees of lightness and dark. The sources of light are controlled to give an effect of constant movement, of almost slovenly beauty. The shadows throw large holes and patterns over the walkers' faces and bodies, and refuse to be dulled. This mix of movement and color continues through the scenes of the bazaar as the fiance (Nigel Havers as Ronny) ushers his girlfriend and his mother (Mrs. Moore) through a

festive assemblage of noisy merchants and peddlers, marigold displays and candies and what seems to be a shrouded body being carried over shoulders. "Ronny, is that a body?" asks the young woman, a little shocked. The man turns, and apologetically concedes, with his head bent. "Yes, I'm sorry. We'll soon be out of this," he says. He knows his future fiance so little that he thinks she wants to be out of it.

Out of the bazaar, Ernest Day transforms this India from colorful greens and oranges and noisy reds and dancing shadows to one more stately and prim, its hues all blues and browns. The street on which the British have built their houses is almost free of dust. It is lit uniformly in a stately dulled way. The scenes inside Ronny's house are still rich in texture and detail, to be sure. One thing Lean and Day never do (except in one small scene and there they do it on purpose) is to manipulate focus. The screen stretches across and inward, in deep focus clean and unvarying throughout this movie. If

The Light On Her Face

*the
adventures
of a
world
famous
cinematographer
and inventor
of the zoom
lens who
photographed
the great stars
of Hollywood
and made
them
glamorous*

by
JOSEPH B. WALKER,
ASC
and
JUANITA WALKER

Foreword by
BARBARA STANWYCK

Send \$19.95 plus
\$2 postage (foreign, \$2.50)

California residents add
\$1.20 state sales tax

The ASC Press \$19.95
P.O. Box 2230, Hollywood, CA 90078
"The Light on Her Face"

Name _____

Address _____

City _____

State _____

Zip _____

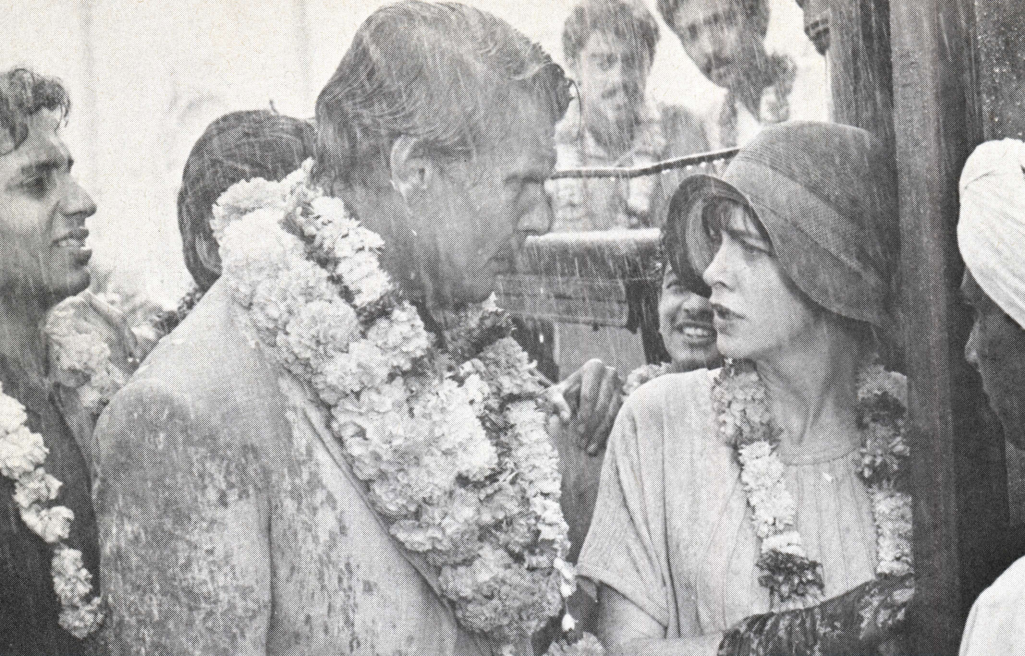
☐ Payment enclosed ☐ Charge my Visa ☐ Mastercard

Card # _____

Exp. Date _____

Signed _____

Allow 6-8 weeks for delivery U.S. funds only.
\$2 Postage (Foreign \$2.50) California tax \$1.20



Miss Quested and Fielding after the trial.

Dr. Aziz and Godbole in Kashmir.



they want to call attention to an important prop or gesture, Lean and Day cut to it and shoot it elegantly. There is no rack-focusing in this yarn, and no fuzziness or blurriness to be spotted anywhere.

The hard shadows do emphasize the heat, making its weight oppressive and at times unbearable. But you do miss them whenever the action moves to the interiors of the clubs and houses of the British. The interiors to the Indians' houses, by contrast, are sparsely furnished, with floors barely covered and walls left largely unadorned. They are dwellings that abound with windows and doors, however. Ernest Day bounces soft oil-lamp-like light all

through these interiors, and bathes the brown skin of their inhabitants with a lovely sheen that invokes sympathy.

In an early scene, Dr. Aziz is tending to an older Indian patient, who lies aching in her bed. His hand examines hers, and a glow of light seems to emanate from where the doctor puts his healing touch, and reflects off the shiny skin. Later in the movie, Dr. Aziz meets Mrs. Moore and tells her that she has the kindest face of any English woman he's ever met. And from that moment on Peggy Ashcroft's smooth, white skin gains an equally glowing warm light around it and her face shines just a little more with an incandescence also healing.

The purpose served by the windows and doors in the Indians' houses is one of interference. Light and dust invade those houses, and are welcomed in them. Dr. Aziz sits on the floor with his best buddies to eat their supper, and a large red cover is flung off the spread of foods. The men sit strategically around their meal, while in back of them, and beyond an open door, the moving waters of the Ganges River are sending shadows into this room, shadows that interrupt the set pattern, continuing the dance already begun.

Ernest Day (who had operated on *Doctor Zhivago*, *Lawrence of Arabia* and *Ryan's Daughter*) has said that he used no filters and no diffusion on *A Passage to India*. David Lean, who also wrote the screenplay for the film (adapting from E. M. Forster's novel as well as the Santha Rama Rau stage play that it inspired) has told reporters that he shot it with the images already edited in his mind. As a result, much of the energy on the screen emerges strongly, and registers with conviction – the conviction of intellect. Most shots are let to take their natural pace, and are unbutchered. Most sequences have a very well defined mix of perspectives. The film is shot and put together miraculously without invention. Even the compositions are symmetrical (except in a sweet final shot of Dr. Aziz standing at the side of the frame, witnessing his good friend Mr. Fielding, drive off with his wife into the tree-lined distance). Lean is not known for making subtle movies. If *A Passage to India* is not deeply felt, it is at least vastly stimulating, in the way great stories and fables are. (The badly chosen, syrupy music score by Maurice Jarre is the film's only attempt at feeling, but it does more damage than good, alienating the inherent dark humor in many of the images and the dialogue, and romanticizing themes like diluted lust and clash of manners, when it should be leaving them alone.)

Swatch Out!

Send for the New Cinegel Filter Book. FREE.

Cinegel is Rosco's Academy Award winning range of materials for light control.

Now, it's a more exciting series than ever. The range includes additions and reformulations specifically developed to meet the demands of the new film emulsions and light sources.

Among the nearly 100 materials in the new Cinegel

swatchbook, you'll find filters for controlling fluorescents and the full range of arcs, as well as tungsten lamps. Included are 18 different diffusion materials and eleven metallized surfaces for reflectors. You'll also find that the technical data you need is included right in the swatchbook.

Be sure you have your own Rosco Cinegel swatchbook. It's a basic tool of the trade . . . and it's available free from your rental house, Authorized Rosco Dealer, or any Rosco office.



rosco

36 Bush Avenue, Port Chester, New York 10573 • 914/937-1300 Telex: 131472
1135 North Highland Avenue, Hollywood, CA 90038 • 213/462-2233 Telex: 691123
69/71 Upper Ground, London SE 1 9 PQ England • 01-633-9220 Telex: 8953352
Formosus Kingdom No. 101, 16-19, 3-Chome, Roppongi, Minato-Ku, Tokyo 106 Japan
Pilar de Zaragoza 37, Madrid 28, Spain • 246-1102, 246-1107 Telex: 42710 ATT: 42-00802
1271 Denison Street #66 Markham, Ontario, Canada L3R 4B5 • 416/475-1400

rosco
cinegel

new

Color
Correction
Filters

PROFESSIONAL LIGHTING HANDBOOK



by Verne and Sylvia Carlson

As with their Professional Cameraman's Handbook, authors Verne and Sylvia Carlson here set forth a "what-to-do" approach to the subject of motion picture lighting. The Professional Lighting Handbook is a practical guide to setting up and using professional lighting equipment. Fully illustrated, the handbook provides useful information on every facet of lighting equipment, from lenses and housing to controllers and filters. This hardcover book sells for \$22.95.

When ordering, send name and address along with \$1.50 for postage and handling. California residents add 6½% sales tax. Check or Money Order must accompany order.



BIRNS & SAWYER, INC.

1026 N. Highland Ave., Hollywood, CA 90038
(213) 466-8211 Cable BIRNSAW TELEX 673280

NO EYEPIECE FOG



With these heated and non-heated anti-mist eyepieces for film and video cameras.

2 Types Available Electric and non-electric

ELECTRIC HEATED

- V0190 All Arriflex Models except 16SR \$125.00
- V0191 For Arriflex 16SR \$165.00
(specify 12 or 16VDC when ordering)

NON-ELECTRIC

Made of special anti-mist optics

- V0192 For all Arriflex Models \$99.50
- V0195 For Sony 330, 300, DXG6000, BVP110, BVW1, DXCM3, Ikegami HL79, JVC 1900/2000/2700, Hitachi SK91/81, Philips LDK14 \$65.00
(specify camera model when ordering)

For the best in camera accessories, call
ALAN GORDON ENTERPRISES INC.

1430 Cahuenga Blvd., Hollywood, CA 90028
(213) 466-3561 • (818) 985-5500

If Day had used diffusion, he would have lost half of the meaning of the story. In tracing this duel between mystery and muddle, *A Passage to India* smartly resorts to the use of shadow and light to illustrate its many points. At the heart of this long and engaging tale of English travellers in the land of the Rajah, is an unfortunate occurrence that takes place inside the foreboding Marabar Caves between a white woman (Miss Quested) and an Indian man (Dr. Aziz). That the whole occurrence is shrouded with question marks is part of what the "passage" of the title is all about.

Visually speaking, the film nearly takes a literal approach to presenting the problem, and so when Dr. Aziz first sees Mrs. Moore, she is only a dark figure in a forbidden place (a sacred mosque). When he asks the figure to identify itself, Mrs. Moore's face steps into the light, and all around her hair, an aura of white light is formed, as the two have their first talk. The choice of angles here is also significant. Since they do not know each other, each is afforded a full head-on close up, in which only the faces are lit, and the rims of the hair are slightly back-lit. The environment in these shots is still obscure. In their two-shot, filmed from the side, the two are uniformly engulfed in night-blue coolness and shadows.

This is also one of the only places in the movie to use a zoom lens quite conspicuously. Sitting by the edge of the river, Dr. Aziz feels the presence of another in the mosque with him, and hears the rustling of leaves behind him. Meanwhile, the camera is zooming on his back, slyly, and stopping, then on his neck, and stopping. Each time he turns, the invading lens comes to a halt. This is deception in perception as well, for when we spot her, Mrs. Moore is in a place too far from him to be able to spy on him. So many English ladies do not bother to take their shoes off, Dr. Aziz explains to the new arrival, "especially when they know no one is

around." "God is here" she counters. "Yes, God is here," he repeats. "That is very fine."

At this point, Mrs. Moore is already beginning to confront her own death (and thus, the visual reference to the stretched-out body in an earlier scene, and Aziz's talk of sometimes seeing a dead body float by in the river, shortly after). When Mrs. Moore enters the infamous Marabar Caves, and the horrible echo begins, the camera appropriately lifts up to a God's point of view (also a zoom since the ceilings are too low). The woman is sweating and struggling for her breath.

When she reaches for the exit she makes another transition from dead darkness (the caves' insides are only lit by candles, and bottom lit at that) to scorching hot sunlight outside. And when she finally clutches her chest, and feels the end, while on the boat sailing back to England, it is her shadow that first falls on the chaise lounge chair. She then drops in it and fills it. The journey has been completed (and recalling the earlier visual references, her body gets wrapped in white fabric, and then dropped in the ocean).

Throughout *A Passage to India*, the burgeoning themes, thoughts and double meanings (double, in keeping faithful with its bent on symmetry), water always manages to seep in as a mending tool and a clarifier. The film opens with rain, and ends with a shot of rain as well (one that is also framed in a window). Even the dreaded monsoon rains come to wipe away all evil. Whenever there appears to be friction or conflict, the image of still water comes close after to supply the required harmony (Dr. Aziz arrives at Major Callendar's door to assist on a house call, and is told he is not needed. He looks up to address the guard, and the light is turned off on him and so he is displaced and literally in the dark. Cut to the exquisite image of the moon floating in water, and Aziz's tired hands reaching up to it, in the lily pond, to wash). Water is important to

Indians, Aziz explains to Mrs. Moore, and always had been. One gets the feeling that it saves them, and indeed, when Miss Quested walks over to the witness box to testify in her court hearing, the light on her face softens for a moment, and the shadows that the overhead fan had been swaying over, begin to gel together. The clouds in back of her are clearly advancing, and the blue in the sky for a split second is a starker blue, just before she sees the first drops of rain start hitting the glass roof, washing away dirt that had accumulated there, and the stench of the huge "mistake" she'd made, causing a scandal and a local uproar.

The following crowd scenes are shot in wide angles that stress the reflective quality of the road surfaces. The wet of things makes them clearer, and spreads their light around. Fielding (a man we first meet through the translucent glass door to his shower while he is bathing) is drenched under the rains, notices the lonely and discarded figure of Miss Quested, and runs over to rescue her. She is also forgiven at last by Aziz, in the form of a letter she reads behind a rainy London window, shimmering with translucent light, but understated still. (Upon finishing the letter, her frown breaks, and her face grows into a wistful smile; she almost shrugs and walks off, letting a part of the curtain fall, which is just the right thing for the film to do, instead of exaggerating the effect of what, after all, was a mere occurrence.)

Symmetry fits Lean and Day's overriding concepts for *A Passage to India*, because symmetry is English. It also happens to work cinematically when applied to the film's real mystic core - its echo. Everything in the film must happen twice, if not more. It is charted this way (at the entrance of the cave, Aziz's shadow makes a double of him, and it's eerie). It's the film's way of telling you, through pictures, that fate controls our lives, and mocks them. "Adventures do occur, but not punctually," Mrs. Moore assures

Porta-Brace™ Production Case



A new idea for carrying production accessories.

K and H Products, Ltd.
Box 246, North Bennington
Vermont 05257 (802) 442-9118

Designed for video and film crews, this line of reinforced cordura nylon cases will carry a very large, well-organized array of accessories. These cases are constructed on a metal frame with hardboard and foam walls. They won't sag or collapse under very heavy loads. Three sizes are available. Case pictured above is 27" long. Contact your dealer or call.



**technological
cinevideo
services, Inc.**

**SERVICE SALES
RENTALS**

**Arriflex,
Sachtler, Chrosziel,
CP, Tiffen, Lowel,
Zeiss, Angénieux,
and Many Others**

**Available for Immediate Rental
ARRI 35 BL III**

Technological Cinevideo Services, Inc.
630 Ninth Avenue • Suite 1009
New York, N.Y. 10036

(212) 247-6517

*T. Carl Schietinger, President
Mailing Address*

P.O. Box 25 Closter, N.J. 07624

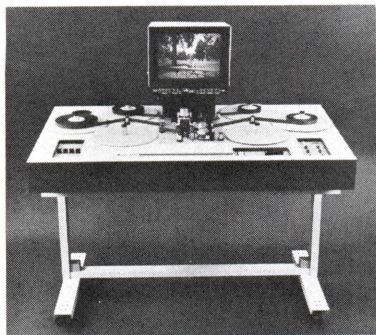
Broadcast Quality Available For Rent

HL - 79 EAL
DXC - M3
BVH - 500
BVU - 110
BVU - 800
SEG - 2000

215-864-0658

**VIDEOSMITH™
RENTALS**

A Service of Videosmith, Inc.
2006 Chancellor Street,
Philadelphia, Pennsylvania 19103



Who are you calling a lightweight?

It's true: Moviola®'s new 16mm portable console editor weighs in at a mere 215 pounds.

Which makes it a breeze to move, ship or haul. Its tilting table and heavy-duty casters help, too. And it's adaptable for use anywhere in the world.

Our portable has six plates, picture transport and two magnetic sound transports, just like the big guys. But its modular construction makes for easier servicing.

Leave it to Moviola® to make "lightweight" the right weight.

Moviola® by J & R J & R Film Company, Inc.

6820 Romaine Street
Hollywood, CA 90038
(213) 467-3107
TWX: 910-321-4220



Moviola® and the movies since 1924.

her anxious young companion at one of many awful social gatherings (where the Indians are grouped in their colorful saris, and the British are set off in their arrogant grays and whites and hats and gloves).

Quested gets not one but two adventures, when she least expects them (First, her bike ride into the temple of carnal delights, where statues of embracing lovers are lit with hard, hard light, and depicted from low angles that eerily bring them, and their open nostrils and eyes to life, until the monkeys descend upon them and scare her away. Then her ascent, with Aziz, to the muddle that is the Marabar Caves incident). The Brahmin Godbole (Alec Guinness) is the character given most of the film's puzzling jewel lines and answers. He is shown, when first presented, seated at the edge of a pond, his legs half immersed in water, with his robe raised above his wet knees. The water is still, but crowded with dancing shadows (it is Fielding's house, a house not altogether stately British nor completely given to the Indian atmosphere of ever changing light). Godbole explains: "The sun will soon be driving us all in the shadow, and I was enjoying the water."

His statement not only simplifies the essence of the narrative (and its celebrating of fate) but also offers the clearest clues to its visual design. India is a land of contrasts, and moods, and like the weather, undergoes severe shifts from heat to iciness, from harmonious bliss to outright aggression. "India forces one to come face to face with oneself. It can be rather disturbing," Mrs. Moore remarks at one point. There is nothing to do, but give in, surrender. "So do nothing? is that your philosophy?" exclaims an outraged Fielding in the face of the orthodox holy Godbole, who grins and answers, "My philosophy is do what you like but the outcome will be the same."

No one knows what is inside the Marabar caves. Godbole knows what's *not* inside them.

They are dark, he says, there is an entrance, and you enter. They do have a reputation. Like death, perhaps they are overrated. And so, when Mrs. Moore enters, and hears the child's cry echo back in thunder, twice, shaking the very insides of her head, she finally realizes what the Brahmin had meant about the soul's pursuit of Nirvana, and what he meant when he described Mrs. Moore as a very old soul. A very old soul is one that has been here before. Similarly, the echo goes, and comes back. Her soul, too, will be resurrected, we are told, when "the sea gives up her dead."

There is never any doom felt in the way any of this is filmed or presented. It, in fact, is sometimes almost charmingly humorous in illustration (and once, utterly sentimental, as in the last shot, a throwback to Lean's old fondness for spectacle, where a gorgeous landscape of blue skies, green meadows, yellow flowers and tall bare trees, brings Mrs. Moore's already-resurrected soul, in the form of her own daughter Stella, who is, incidentally pregnant. "So, your name will *not* die out," sighs Aziz in relief).

Like any great storyteller intent on telling his story (and in love with it), Lean and the eyes of his cinematographer, become one man, merging into one sensibility. Nothing is shown that has no traceable purpose, and no emotion is ever mustered through a clever move of the camera (the camera moves very seldom, in fact) or the manipulation of a mood. There are a great many close-ups of objects that are integral to the telling of the story (in the tradition of Dickens, and Poe), but, outside of the necessarily jarring quick-cut rhythm of the monkey temple sequence, almost all the scenes are fleshed out and lavished with light and sharp focus. If the moments of magic happen more in the mind than in the heart, at least it is a mind with an eye which can seduce and enchant. Like the Brahmin had said, "There is an entrance, and you enter."

FAD TIMES



Fad Times custom design jackets.
Classy. Distinctive.
Reasonably priced.
For the fun, the fashion, the flash.

FAD TIMES

1025 South Hill Street
Oceanside, CA 92054
(619) 722-1606

HOLLYWOOD





*Candle chandeliers
were hung in the
theater by means of
scaffolding
supported outside by
the roof.*

Miroslav Ondricek and

AMADEUS

Nora Lee

The dramatic and ominous chords of Mozart's "Overture to Don Giovanni" fill the theater. The screen is totally black. *First the music, then the picture.* The camera pulls back slowly to reveal the dark, snowy streets of Vienna. From somewhere in the night comes the tortured cry of the man who will tell this story – "Forgive me Mozart! Forgive your assassin!" The camera moves from street to gloomy interior and back into the street to strains of the "25th Symphony in G Minor" while the opening credits roll by. A yellowish cast from the street lights, spilling from windows, glowing around streetside fires introduces the world of Wolfgang Amadeus Mozart and his enemy and admirer, Antonio Salieri. This is *Amadeus*, and this is the photographic artistry of Miroslav Ondricek.

There has rarely, if ever, been a film that deals so perfectly with the frustrations of mediocrity. Ironically, it takes real genius to deal with the subject appropriately. The genius of *Amadeus* has been recognized with 11 Academy Award nominations. Among them is Ondricek's nomination for Best Achievement in Cinematography.

Ondricek, a Czechoslovakian director of photography, is celebrating his second Oscar nomination (the first was for *Ragtime*) in a long and varied career. His films have ranged from documentaries to the surrealistic to the realistic. Many of them, like *Amadeus*, have been directed by Milos Forman. *Amadeus* has a more realistic look than one might have imagined given the fact that it is set in the Eighteenth Century. Only four of the numerous interiors were built on soundstages. All the other interior and exterior locations were found in or near the city of Prague, Ondricek's home town. Every effort was made to find buildings that were actually in use during Mozart's time. The carpets, tapestries, marble-top tables and musical instruments were most often original period pieces.

"It is good luck for the artist when he has the chance to live with the story before he starts shooting," Ondricek said through an interpreter from his home in Prague.

Pre-production and research for the film spanned two years, including location scouting in Vienna, Salzburg and Budapest. The decision was made to shoot in Prague because it had changed the least since the 1700s. Its beautiful and historic buildings had managed to survive war and developers. Many of them are held in national trust and are maintained as museums with period furnishings. Forman, also a native of Czechoslovakia, said that there were streets or squares where you can turn the camera 360 degrees and not have to alter a thing.

The city of Prague, transformed through Ondricek's camera into Eighteenth Century Vienna, did not open the doors of its historic buildings without some convincing. The opening nights of the numerous opera sequences were all filmed in the ancient Tyl Theater. This theater was built over 200 years ago and is an all-wooden structure. There are very

few like it in the world. When Ondricek, Forman and choreographer Twyla Tharp saw the theater they knew it was the perfect place to film the opera scenes. But when Ondricek told the theater management he wanted to light it with candles, "they threw me out." It took months of negotiations with the Czechoslovakian government and ministry of culture to secure the use of the theater and additional time to create a support system for the eleven 700-pound chandeliers, each burning 40 to 60 candles.

Since the Tyl Theater is a national treasure, the management did not want so much as a nail added to the structure. The crew devised a large steel and aluminum scaffold that was supported by the roof of the theater itself and extended it into the theater through the windows of the dome. The chandeliers were hung from this rig and no damage was done to the structure. "We have to thank all the technicians and stage hands for making it possible to shoot in the Tyl Theater and, especially my gaffer Rene Michalicka," Ondricek says.

Ondricek created naturalistic daylight effects on the set constructed for Mozart's apartment.



Ondricek often augmented natural candlelight with Chinese lanterns containing 250 watt bulbs, and he colored light by spray painting bulbs rather than using gels.



The fear of fire was so great that firemen stationed themselves throughout the theater at 15-foot intervals to watch the candles. Only two unfortunate incidents occurred. Twice during the performance of "Don Giovanni," the lead character moved too close to an onstage candelabra and his hat caught fire.

The theater offered a final and very special reason to film there. It was in this theater over 200 years ago that Mozart conducted the opening night of "Don Giovanni." That historical fact affected the crew as well as the actors. Tom Hulce (Mozart) described the experience as "eerie and awe inspiring." Peter Schaffer (writer) thought that the feeling was "miraculous" and "transforming."

Filming in the theater was not the hardest sequence for Ondricek, but clearly it had special problems. The camera movements were limited because of the special constraints of the historic building. Most of the time the camera

was just locked-off either in the audience, on the stage or in a balcony. The lighting, which contributes so much to this entire film, was maintained in several interesting ways.

Ondricek filmed all of *Amadeus* on Eastman Kodak 5293 stock because 5294 was still six months away when shooting was completed. He rated the film at a constant EI 250 and used no color filters. As best he could, he augmented the mood-setting candles, torches and fires with Chinese lanterns housing 250-watt bulbs. He used a low key light and when additional light was necessary he colored it by spray-painting the bulbs. He did not use gels. These same techniques and other secrets he would not divulge over the telephone account for the candle-lit look that pervades the entire film, not just the opera sequences.

The lighting in the Tyl Theater was, as Ondricek intended, very realistic. The yellow color flattened the stage sets and gave them a sort of

washed-out, pastel look that placed them squarely in the Eighteenth Century. He even used candles in the footlights and though it might have been tempting, he did not replace them with electric lights for the reverse shots.

"Wherever the camera was looking we were trying to create an atmosphere. We were trying to create the atmosphere of soft candlelight all over and all the time," concluded Ondricek.

The other theater in the film, Schikeneder's Volkstheater, was built on the largest sound stage of the Barrandov, Prague's major motion picture studio. It was complete with 700 seats and was designed as a faithful reproduction of the type of people's theater used in the late 1700s. This set, one of the four sets built for the production (Salieri's hospital room, Mozart's apartment and the staircase were Mozart greets his father are the others), afforded a great deal of freedom for shooting. For that reason Ondricek remembers the scenes shot here as

most enjoyable. The parody of "Don Giovanni" and later, "The Magic Flute" were brought to life on these stages. Here he had what was a luxury for most of the shooting – the ability to use traditional camera movements and as many extra lights in as many places as he wanted.

"We had many more possibilities here in this theater because we could use a crane and dolly and we could work with the color of the set. I was trying to keep the unity of the interior locations and the soundstage so that no one would recognize what was shot on the soundstage," said Ondricek.

According to Ondricek, "The Emperor's Palace was the most difficult sequence to film. We used the Grypek Palace in Prague as the location. Today it is the home and headquarters of the Archbishop. We were shooting everything from the floor to the ceiling yet we had so few possibilities to move or place a light. We were not allowed to light outside the windows, so we relied on the sun. During the time we were shooting, some days it was raining and some days it was sunshine. It was very difficult."

The lack of something often stirs imagination and inventiveness. Because Ondricek was unable to rely on augmenting the source lighting outside the windows, the film has a realism it might have otherwise lacked. Often, if there is a window in a scene it is so overexposed it is practically burned out. The effect is marvelous and contrasts sharply with the dark, candle-lit scenes. The scene of Salieri's first encounter with Mozart is one of those moments. Using the perfect baroque palace in Kromeriz as a location, the white room is filled with white light – the windows are so hot the panes disappear – with people in white wigs and women with white faces. Salieri, the only one in a brown wig and dark clothes, stands out from the crowd and is revealed perhaps for the first time as a villain.

Splash - Never Say Never Again - Thunderball - Cover Girl - Pan Am - Epcot 3-D - G.E.

MAKO PRODUCTION
U/W UNDERWATER
RENTALS

U/W Betacam U/W Props - Sets
U/W H.S. Arri III U/W Special Effects
U/W Sound U/W Location
U/W Lighting

Jordan Klein DGA/IATSE

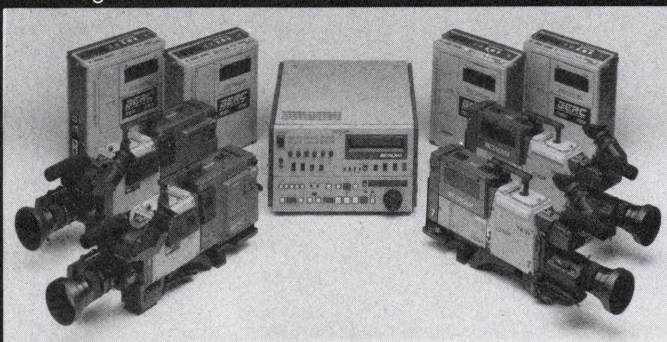
P.O. Drawer 1630, 1630 S.W. 17th St., Suite 200 Ocala, FL 32674
(904) 732-2268 Telex: 56-336

Delta - Chips - Fantasy Island - Benji - Western Electric - Flipper - Jaws 3-D - Lady Ice

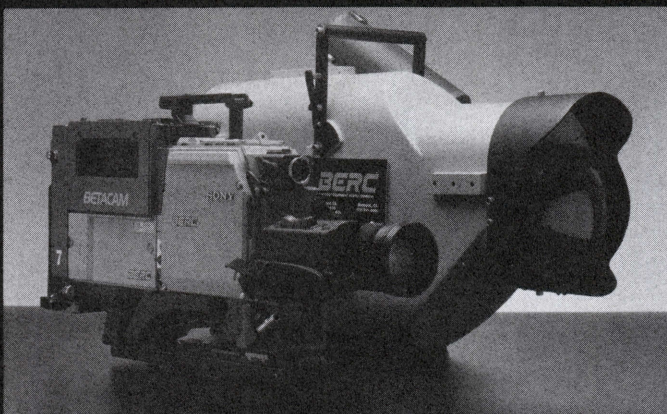
Day of the Dolphin - You Only Live Twice -

BERC. THE NATION'S BETACAM RENTAL LEADER

Continues its commitment to Betacam with all new BVW-30 Plumbicon Betacams and Betacam Underwater Housing.



With all Sony Betacam options...



and complete underwater systems.

YOUR FULL SERVICE RENTAL COMPANY
THE BROADCAST EQUIPMENT RENTAL COMPANY
4545 Chermak, Burbank, California 91505-1063

BERC
(818) 841-3000

The Professionals

"At last, an HMI you can work with."

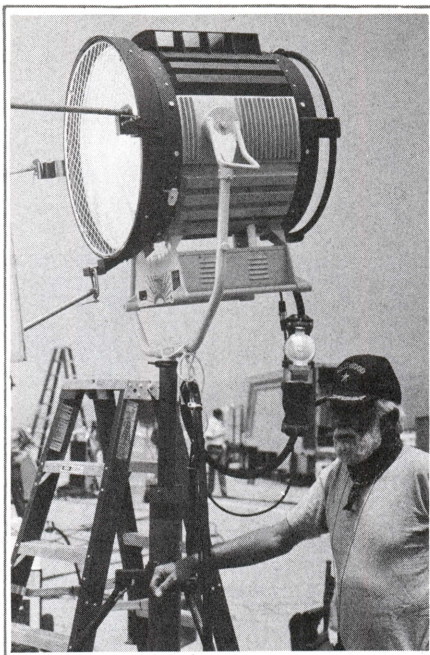
When Director of Photography and five-time Academy Award nominee William A. Fraker, ASC teamed up with LTM to use our new Luxarc 12K HMI on "Protocol," Mr. Fraker had some doubts.

A long-time fan of the carbon arc brute, Mr. Fraker said he didn't really care that our new 12K puts out approximately 25% more light than his old standby. He said it wasn't important to him that our beam spread was significantly greater at a given distance.

Well, we said, what was important to him?

"Shadow sharpness. Detail. In other words, the look of a brute."

And how did ours compare?

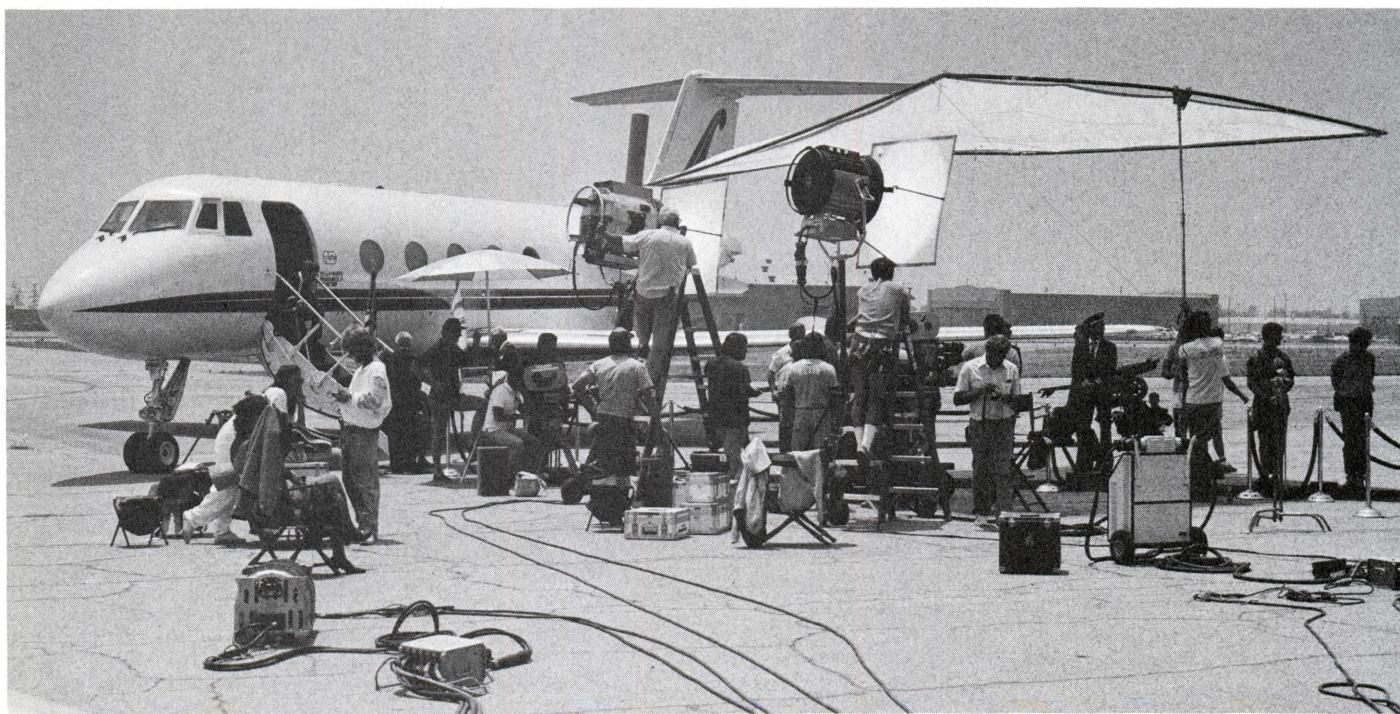


"Incredible. I never thought it would be possible. LTM has come up with the first HMI, or for that matter, the first light of any kind, that I feel as comfortable lighting a set with as I do with a brute. And that's saying something!"

While we agree, we think it's a shame if nobody cares that our Luxarc 12K is self-tending, uses almost 50% less power and produces over 25% more light . . . A crime if nobody cares that it's the most efficient, most cost-effective, least expensive light to operate.

Oh, well. Maybe it's enough that our new 12K is quite simply the brightest, cleanest, sharpest light in the world.

When all you need is the **best**, come to the professionals.



CALL OR WRITE US FOR LEASE AND PURCHASE INFORMATION.

LTM CORP. OF AMERICA

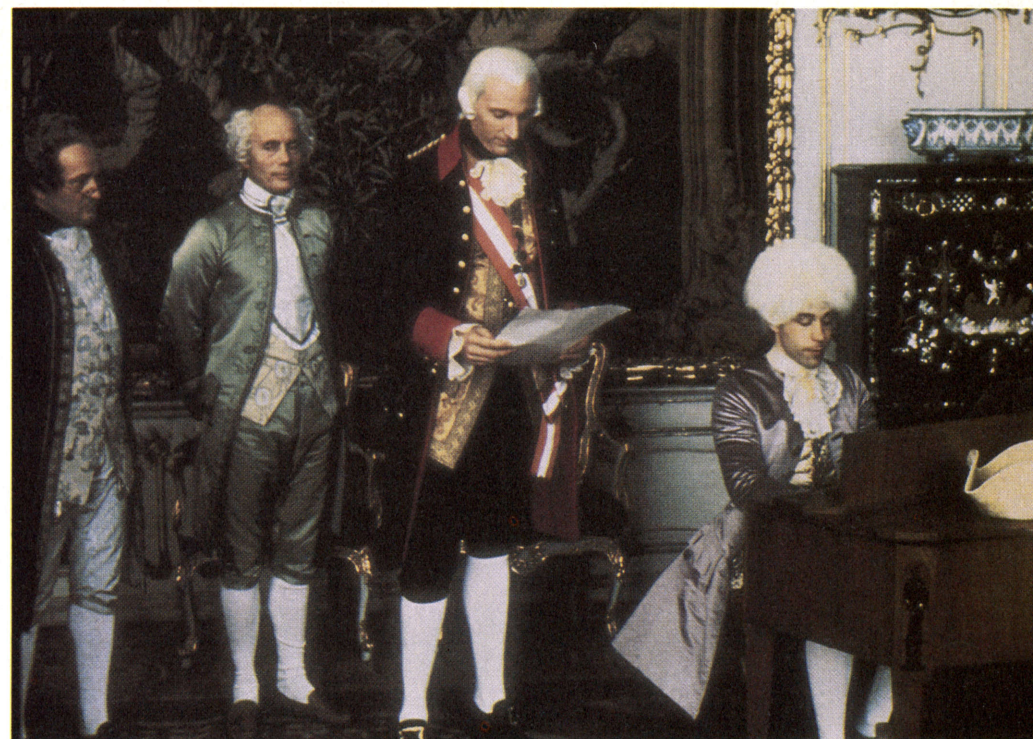
1160 N. Las Palmas Avenue, Hollywood, CA 90038 • (213) 460-6166 • Telex 67-7693

LTM FLORIDA: 909 N.W. 10th Terrace, Fort Lauderdale, Florida 33311 • (305) 522-1070 • LTM FRANCE: 104 Boulevard Saint-Denis • 92400 Courbevoie-France • 788-44-50

If all the location work was as difficult to shoot, it was a wise decision to build Mozart's apartment and Salieri's hospital room. These two sets occupy a good deal of time on screen. Salieri's little room is the setting for the all night confession of his murder of Mozart. Ondricek chose to light Salieri, now an old man, thanks to the genius of Dick Smith, from behind. Throughout the day and the long night he sits with his back to a window. The first close-up shots of him are hotly backlit. His hair forms a glowing halo around his head, but his mocking eyes destroy any angelic illusions. As night comes on, the lighting changes and his face is lit from the screen-left side by the golden glow of the candles. "We were always shooting him so that his makeup would be in contrast to the light," says Ondricek.

Part of Ondricek's reputation rests on his ability to shoot musicals, though *Ragtime* and *Amadeus* are hardly typical musicals. He says that perhaps it is because he loves music. *Amadeus* afforded him the opportunity to illustrate photographically some of the world's most famous music. There are many places in the film where Mozart's music simply takes over. There is no dialogue, no sound effects – just Mozart's music and Ondricek's photography. For a man who felt he had to prevent his artistry from interfering with the storytelling in *Ragtime*, this was an opportunity to do just the opposite. The photography replaced the words of the storyteller.

One such scene shows four or five men running before Mozart's carriage carrying his piano and cuts right into a garden party performance. Another and even more impressive interplay of music and photography occurs toward the end of the film. Intercut with shots of Salieri feverishly writing the "Requiem Mass" are shots of Constanze on her way to Vienna in a coach. The music of



Above: Historic buildings in Prague provided much of the ambience but often posed problems for lighting and camera movement. **Left:** Salieri's hospital room was one of four sets constructed for *Amadeus*.

the magnificent "Requiem" fills the theater as the coach barrels its way toward home and the dying Mozart.

It is the final act in this battle of genius and mediocrity that made the most demands on the photographer. The actors are practically stationary, the room is small, the light is dim. There are few cues from the dialogue to inspire photography because amazingly enough, what we are

hearing is the dictation of a piece of music backed by the sound of that music in Mozart's head. Hardly the usual stuff of drama. It could have been a dull, lifeless sequence. Yet the combination of editing, acting and photography turned it into the tension-filled, torturous climax it had to be. There are several shots in this sequence where Salieri holds his candelabra directly in front of the



Tom Hulce as Mozart.



camera lens. To see Mozart we must look through the candlelight! Ondricek attributed the success of these shots to the film stock he chose. But the film stock is not responsible for imagining the shot or composing it or reading the light!

Ondricek holds an interesting position in the world of cinematography. He is one of the few filmmakers from a Soviet-bloc country who regularly makes films outside his homeland. His friend and the director on many of his films, Milos Forman emigrated in 1968 from Czechoslovakia to the United States. Ondricek chose to stay.

His love for films and filmmaking stretch back to his childhood. Born in 1934, he recalls that in the 1940s, during the occupation of Prague by the Germans, he made a friend. The boy's father owned three movie houses in Prague and the boys spent every moment they could in the basement of the theaters watching French and American films that were no longer allowed to play in the theaters.

The occupation ended, but Ondricek's love of film did not. He first thought that he wanted to be an actor. He actually worked in an amateur theater for a while. He also made some amateur films, but it was not easy to make the transition to professional. He began working on documentary films. This training undoubtedly contributed to his ability to give period pieces like *Amadeus* or *Ragtime* that much-needed touch of realism.

From doing documentaries, pulling focus, doing grip work and laboring in the lab Ondricek acquired a working knowledge of all aspects of filmmaking before he was able to photograph his first feature. He also



went to film school part time at the F.A.M.U. in Prague. It was here that he met Milos Forman.

Ondricek photographed Forman's first film in 1963. It was a 16mm black-and-white picture called in English *The Competition*. Later it was blown up to 35mm and released theatrically. The relationship between these two men has continued for over 20 years and Ondricek has shot all but two of Forman's films.

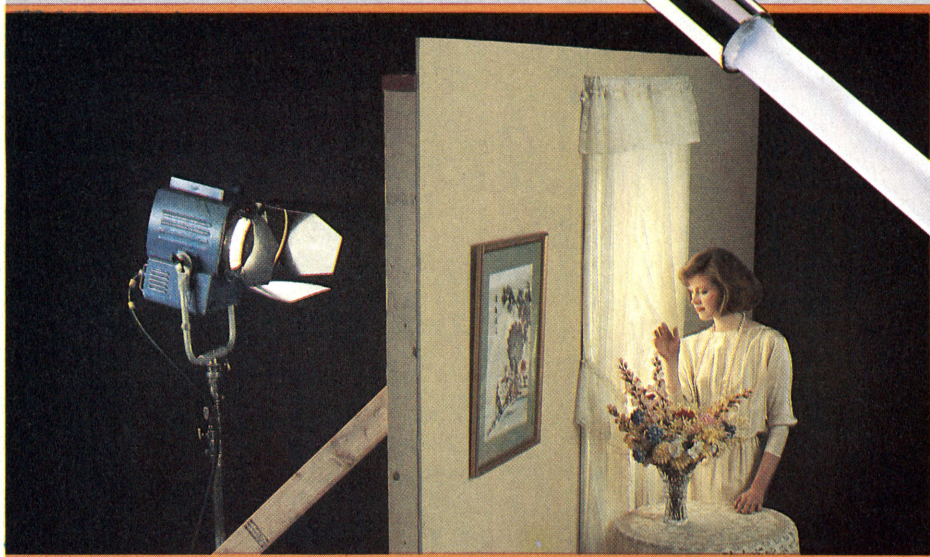
Amadeus must rank artistically and sentimentally as a career high for Ondricek. He was able to combine his love of music, his love of Prague and his love of filmmaking in a rare and memorable style. He also helped perform one final service. Through the making of the film *Amadeus*, Salieri has finally found a modicum of the immortality he sought. He has not been forgotten. His music has even been recorded side-by-side with Mozart's. Perhaps somewhere, in the depths of the hell he created for himself, Salieri is at least chuckling. ■



Ondrick with Milos Forman on location for Amadeus.

OSRAM HMI . . .

Instant
Daylight



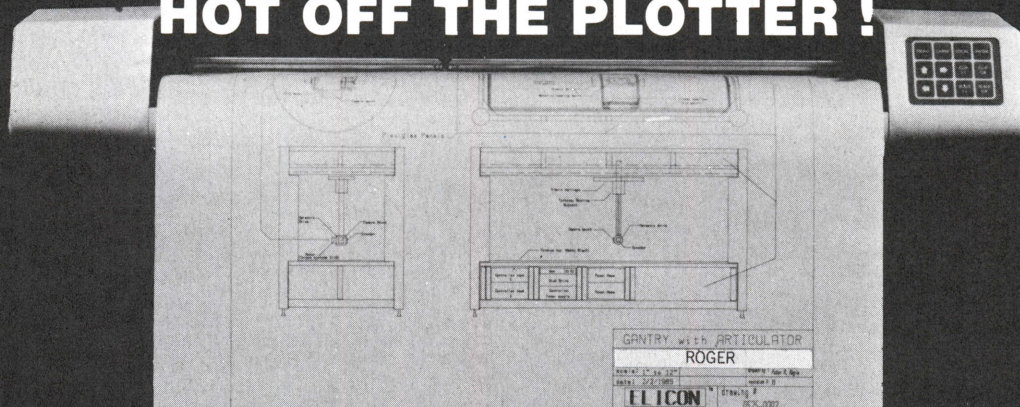
In the studio or on location, OSRAM HMI® lamps deliver excellent daylight color. What's more, OSRAM HMIs save you money and aggravation because fewer fixtures are required. You'll save energy, time, and labor.

OSRAM's third-generation gap-shortened lamps (including our new 12000W) provide 30% more light than conventional daylight sources. To find out more, see your OSRAM dealer or call 1-800-431-9980.

OSRAM

OS/9900-173 WLM 175

HOT OFF THE PLOTTER !



Just in time for NAB, **ELICON** will be unveiling its newest **Camera Control System**. The Real-time Overhead Gantry Effects Robot (ROGER) is a three-dimensional model animatics system with graphic capability. **ROGER** joins **ELLIE**, **SARA** and **ANNIE** in the growing family of **ELICON Computerized Robotic Cameras**. Adopt one today.

ELICON[®]

245 Viking Ave., Brea, CA 92621
(714) 990-6647

See Us at
Booth 143

Linwood Dunn, ASC

The Gordon E. Sawyer Award, established by the Academy of Motion Picture Arts and Sciences in 1980, was presented to Linwood G. Dunn, ASC at the 57th Annual Academy Awards.

Named in honor of the pioneer sound director of many Samuel Goldwyn productions, the statuette is given in recognition of long-term accomplishments by an individual who has made outstanding contributions toward the advancement of the sciences or technology of the motion picture.

Dunn, who is the fourth recipient of the award, began his film career as a projectionist in New York City in 1923. At the same time, he was pursuing a second career as a saxophonist in jazz and dance bands. In 1925 he became an assistant cameraman on the popular Pathé serials, then being made in New York. Pathé soon sent him to Hollywood. He joined the new RKO-Radio Pictures in 1928 and remained with the company for 28 years.

At RKO he worked as a special effects cameraman, as a director of photography, as head of the optical department and as head of the photographic effects department. He created photographic effects for virtually all of the studio's productions, including such milestones as *Flying Down to Rio*, *Cimarron*, *King Kong*, *Gunga Din*, *The Hunchback of Notre Dame* and *Citizen Kane*.

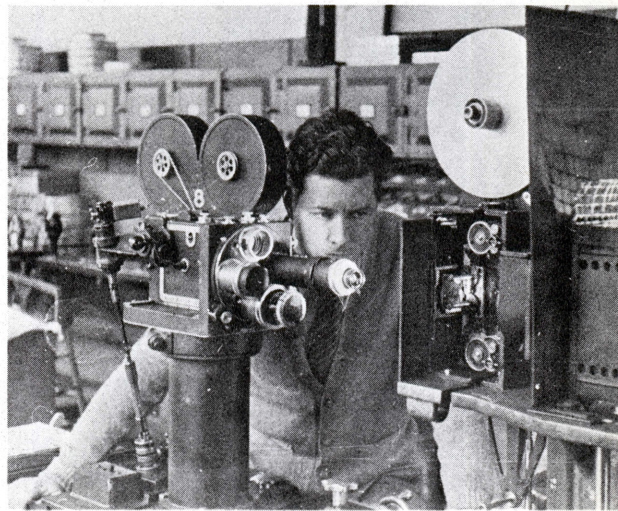
During World War II, Eastman Kodak Co. and the U.S. Government commissioned Dunn to design and supply special effects optical printers to armed forces photographic units throughout the world. The result was the

Acme-Dunn Special Effects Optical Printer, which he developed in collaboration with Cecil Love, his long-time associate. Dunn, Love and Acme were awarded an Academy Class III Scientific or Technical Award for the design and manufacture of the equipment in 1944. In 1981 the printer brought them an Oscar for its "definite influence upon the advancement of the industry." Dunn also was honored with a special Academy Award in 1979 for "outstanding service and dedication," and was in charge of optical effects on the 1949 Academy Award winner for special effects, *Mighty Joe Young*.

Dunn was a pioneer in 16mm special optical effects and in 1946, while he was still at RKO, he founded Film Effects of Hollywood, where he made the first feature film blow-up from 16mm to 35mm color internegative. Among his credits at Film Effects are *West-side Story*, *The Great Race*; *It's a Mad, Mad, Mad, Mad World*; *Hawaii*, *The Satan Bug*, *The Bible*, the *Star Trek* TV series, and *Project UFO* (TV series).

He has also been recognized by the Society of Motion Picture and Television Engineers (SMPTE) with Life Fellowship and the Herbert T. Kalmus Gold Medal Award in 1971. In 1984 he received the Society's highest award, Honorary Membership. He was awarded the Golden Hugo from the Eighth Annual Chicago International Film Festival and was given an honorary Doctor of Fine Arts degree by the San Francisco Art Institute.

Dunn was twice president of the ASC and is a member of the Board of Governors of the Academy.



Lin Dunn at RKO in 1929 with what he calls "a very Spartan optical printer" utilizing a Mitchell camera.



Linwood G. Dunn, ASC.

A Lighting Seminar with Ossie Morris, BSC



Morris adjusts a light in one of the workshop exercises.

Ossie Morris, BSC, at the Tahoe Workshop.



The wit and wisdom of Ossie Morris, BSC, were recently bestowed upon participants in the Tahoe Film & Video Workshops lighting seminar at Laguna Beach, California.

Morris, an R.A.F. bomber pilot in World War II returned to England to the much safer business of cinematography and shot his first feature in 1949. He pursued this profession for 33 years and has only recently given himself the luxury of semi-retirement.

The innovations in print color saturation he and John Huston developed in the 1950's with the four-strip Technicolor process for *Moulin Rouge* and *Moby Dick* are timeless achievements. They inspired a fresh and varied color approach in Morris' subsequent work which is epitomized in *Fiddler on the Roof*, and make all his photography memorable. His recent workshop at Laguna Beach, California, granted one week's instruction from a master whose typically British gift of articulation made him an equally good instructor. Fifteen young cameramen heard a man whose expertise on cinematography is revealed with words such as: "We're lighting actors, not sets," or "There's a certain amount of unreality in all lighting."

Throughout the workshop, Morris discussed the principles and techniques that made films such as *Moulin Rouge* and *Fiddler on the Roof* visually inspiring. His best pictures, like those of other British cameramen such as Billy Williams and the late Geoffrey Unsworth, feature a rare balance of photographic accuracy and cinematic personality.

Most of the various film stocks and camera systems have come and gone since Ossie Morris shot his first feature before color television was invented. His career spans black and white, four and three-strip Technicolor processes, and the early Eastman monopack films up to the present. Equally important, it spans the departure from the studios and studio style photography and the rise of location production and naturalistic cinematography.

Morris' first color picture was offered by red-hot director John Huston who in 1953 was still riding high on the crest of *African Queen*. Huston's project, *Moulin Rouge*, the story of Toulouse-Lautrec, was to look and feel like a series of Lautrec paintings. Through tests, Huston and Morris found that careful selection of desaturated colors for sets and wardrobe combined with a fog filter and artificial studio fog, yielded soft, pleasing colors in the print. This pastel-like color scheme better resembles that of Lautrec, while cinematically it draws the eye into the image. The popular use of bright, garish color in Technicolor films seems to have been an obvious means of marketing the color film by quantity rather than quality. It tends to preoccupy the viewer with individual colors on the image surface, rather than invite the eye in depth to a well coordinated image.

The Technicolor consultant, having never seen such different footage was incensed by the tests which so pleased Huston and Morris. Technicolor fired off a harshly worded memo to Morris

divesting it of any responsibility for the photography of *Moulin Rouge*. Innovative cinematography often requires an idea and the power and diplomacy to steer it past those forces which work to stifle anything unconventional. The innovative, open approach in *Moulin Rouge* would become the centerpiece of Ossie Morris' photography thenceforth, making his pictures visually interesting, even if by slight deviations from cinematic convention.

As Huston and Morris had planned, *Moulin Rouge* is visually stunning. Compositions are often tableaux with meticulous separation and balance. The wonderfully varied lighting extends from fluffy dance performances with Zsa Zsa Gabor to desolate, urban night scenes. The color innovation reaches beyond what was then a bold experiment with low saturation to include the judicious use of aqua green pools of light on various set pieces and walls throughout the picture. Though the device echoes Lautrec's troubled mood, it is never motivated from any practical source other than the imaginations of Huston and Morris.

It is rare that a director or cameraman encourages such an original or expressive use of color on any film, let alone within the more rigid style of a period film. The late R.W. Fassbinder's *Querelle* and *Lola* are important exceptions whose striking colors show the reward for originality and innovation.

John Huston, says Morris, is always pushing beyond the conventions of the day to use what looks and feels appropriate, regardless of past precedent, and regardless of whether a device such as a dark green light is unto itself plausible. In *Moulin Rouge* color is used as it is applied in a Lautrec painting, not as it is seen in nature or an average film. In a film about a painter and his world, viewers would be more apt to accept and appreciate a painter's open use of color. This perception explains why Morris believes



*Morris often uses a steel blue color for night scenes as in this example from *Moulin Rouge* depicting Lautrec's loneliness.*

Green light highlights Lautrec's cane/flask.



"there's a certain amount of unreality in all lighting." Often unreal lighting, such as in a night exterior, must be passed off as natural and realistic on the screen for a practical reason such as the need to see faces, and not for any unusual stylistic effect. Unnaturally motivated lighting techniques can be as much a part of a natural, realistic image as they are a part of a more stylized one. These delicate techniques—the quality of a fill, color, and separation—together define a cameraman's style and most significant aspects of his work. Observing these qualities can provide

helpful instruction to others. In a room where a man sits beside a lamp, most every cameraman will motivate light from the source. What he does beyond that reveals his style and strength as a cameraman. Huston and Morris demonstrate that masters are those who do something different that lends an appropriate, extra quality to the image beyond what conventional photography achieves.

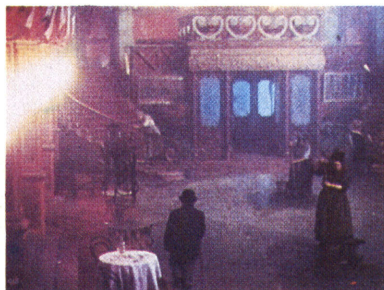
Moulin Rouge demonstrates that an unusual color scheme can add dimension to a

picture, and seem unreal yet natural in a cinematic sense; not plausible but believable. It illustrates that the limits of unmotivated lighting extend further and are more accommodating than most cameramen may know, and finally that innovation is the essence of dynamic cinematography. After the release of *Moulin Rouge*, Ossie Morris received a letter from Technicolor congratulating him and expressing joy at having participated in such a wonderfully photographed film.

Morris used aqua green light to echo Lautrec's depression in a sequence where Lautrec bars a woman from entering his loft.



Morris's use of colored fog and a fog filter to create the impressive look of Moulin Rouge was controversial at the time.



At the workshop, nightly screenings of his work helped Morris clarify the approach which has produced so many visually potent films. A simple transitional scene of a woman ascending a staircase in *Moulin Rouge* illuminates the one principle which all his specific camera and lighting decisions are derived from. In this scene Morris bathed the bannister with aqua green light. This added another element to the otherwise bland, perfunctory scene, which reminds the viewer of Lautrec. After the screening, Morris voiced second thoughts about the green light, wondering if it distracted the eye from the actress and if it therefore ought to have been interrupted. He was concerned that the photography complement the action and not override it. "You must never overpower a director with photography."

This principle governs his decision to use backlight modestly (if at all) and to make the actor's face and eyes the brightest part of the scene. "We're photographing actors not sets." The balance between image style and narrative content must never tilt in favor of photography, says Morris. He maintains that stories are about actors around whom the photography must be created. Wide shots are where geography is detailed and production value emphasized. Medium shots and close-ups are to emphasize actors and must be photographed accordingly. "Lens choice must echo the director's style." To Morris, this may mean avoiding the most graphic or obviously pleasing image in favor of one more functional and more faithful to a director's storytelling style. In "A Man With a Camera," Nestor Almendros concurs, saying that when people go to a cinema they don't want to feel they are in a museum. Compositions must avoid being excessively mannered or picturesque because they can distract attention from the action, or create an inaccurate atmosphere.

Morris is emphatic about spending as much time as possible

with a director, getting to understand him, his story and stylistic tastes. For this communication there is no substitute. A cameraman who tosses a "Love you, babe" to the director before and after shooting, spending the rest of the day tinkering with expensive toys may fall short of capturing the director's vision, if only for lack of knowing it. As Vilmos Zsigmond put it, "You have to make the director's movie."

While believing that good photography always defers to the director's story, Morris told the workshop that there is also a need to "express yourself freely," to be creative and open on your own accord. For him it is mandatory to create photography with variety. Understandably, he says that he would refuse to shoot a television series where a producer expects to see the characters lit identically shot to shot, scene to scene. Rite of passage to expressing oneself freely is to "drop these wretched meters and use your eye."

As an example of how to light by eye using only a single incident meter reading, Morris laid out a shot in which a man walks from French windows overlooking the sea, into a spacious living room. First, one must read the reflective reading outside the windows, balance the windows accordingly, and determine the interior T-stop. Then choose a point in the actor's path where he should be lit up to key exposure and build up the light level there first. Morris recommends that areas further into the room, which may be placed a stop below key, should be lit by eye. He creates variety by having the man silhouetted against the window, then having him slide into key level before gradually slipping into a darker area. As long as the transitions in light level are gradual, this approach creates a naturalistic image pleasing in its variety of tone and credibility. It does so with a single incident light reading thereby allowing the eyes to interpret freely. To Morris, the whole fun of lighting is using the eye and throwing away "these wretched meters."

Morris manipulates tonal and color contrast as the means for achieving variety. In *Fiddler on the Roof*, he created great contrast between areas within scenes, between scenes, and between larger segments of this Oscar winning picture. In a night interior dance scene lit by practical lanterns, Morris used a full #85 gel for people near the lanterns, half #85 on those further away, and white light on those a great distance away. As the scene cuts quickly between different areas, the white light of some shots accentuates the warmth of those near the lanterns. In a film which has a predominantly warm color bias throughout, the white light also accentuates the even warmer color within the tavern. An amber net colors and softens the summer scenes and helps delineate seasonal changes by its removal for fall and winter scenes which appear consequently cooler and slightly sharper. Such scene-to-scene contrast helps the viewer sense the passage of time which accentuates the film's scope.

In addition to the seasonal contrasts, director Norman Jewison and Ossie Morris ensured that scenes were set in every possible time of day to further the film's visual range. There are morning, day, late afternoon, sunset, dusk, and night exteriors with day and night interiors all interwoven throughout the film. By defining time and creating feeling with color and contrast, the photography has variety, and intention.

Cinematographers such as Sven Nykvist, ASC, and Ossie Morris admit that one important thing their careers have taught them is simplicity, and that some of their favorite work has been simply photographed. In "Painting With Light," John Alton, the great film noir cameraman, explains eight different lights essential to a standard Hollywood glamour portrait. While each light purposefully enriches the image, beautiful if not glamorous shots sometimes can be made with one light, especially

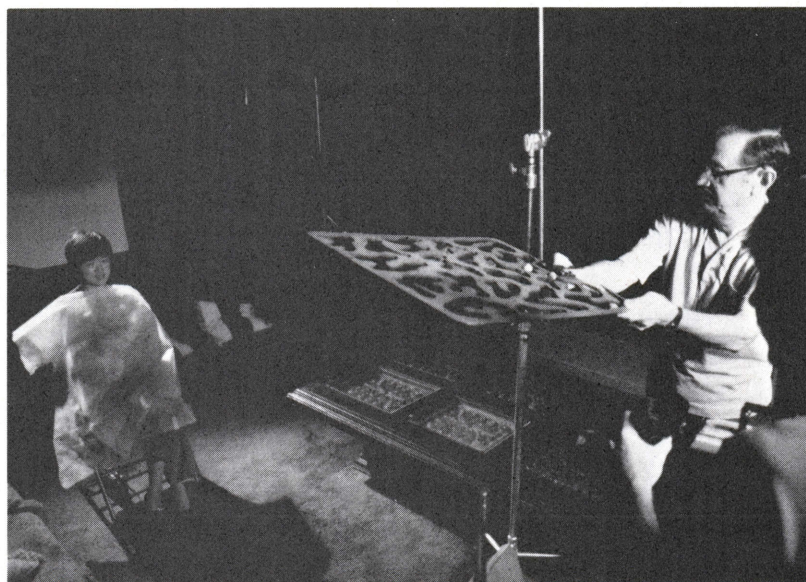
with the enhanced subject separation of color film. In a typical workshop set-up with a man sitting at the foot of a bed, Morris showed how subtracting light can make a simpler, more pleasing image.

A workshop member lit the light colored wall behind the subject with an HMI through a window which left a standard diagonal shadow across the wall and smaller ones behind the intricate headboard. Morris advised that this background light be removed because it was both unnecessary

and false-looking. Softly lit by the ambient daylight, the wall became a simple background which created good separation while directing one's eye to the subject. The hard light on the back wall and headboard shadows had been unattractive and gratuitous, leading the eye to the wall more than to the subject. With this small example Morris demonstrated that simplicity in itself is a pleasing cinematic style and why great cameramen pursue it in their work. Less can be more.



John Betancourt



Demonstrating the use of a cookalourus.

Ossie Morris has a system for lighting close-ups of women which also serves as a test of whether a starlet is deserving of her role. He uses three different set-ups, any one of which will complement most women. If for some reason none of these work, "then she doesn't belong in the picture."

The first approach uses a high frontal key which accentuates facial structure and drops the nose shadow down where it is inoffensive. Morris helped Elizabeth Taylor's appearance with this method in *Taming of the Shrew*. Complemented with his standard over-

the-lens fill light, and a subtle backlight and/or hairlight, this set-up is similar to that used for Marlene Dietrich in her von Sternberg pictures.

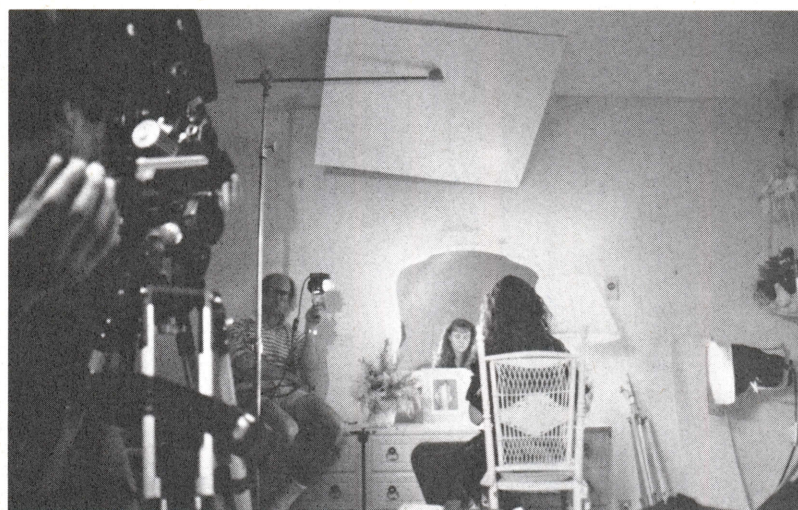
His second set-up employs a soft cross-key. This looks flattering in both high and low-key scenes. The cross light is effective in creating a low-key mood since the contrast between the halves of the face is so prominent. With a subject possessing a small nose bridge, cross light may illuminate both eyes, allowing the mood of cross light, and in addition the eye visibility common to a frontal key.

The final approach uses the more glamorous "back key light," and a soft, sourceless, frontal light from above the lens. With this set-up, Morris places the backlight one stop over key exposure since it is the scene's brightest light and motivated by some practical source. The soft frontal light creates smooth, soft looking skin and may be placed as much as one stop under key (measured by eye, of course).

Backlight in the first two setups is used to separate the subject from the background, if at all. Morris will use a hairlight only when the hair or separation requires it. Common to all three approaches is a negligible nose shadow. Like Nykvist, Morris cringes at the sight of a nose shadow left by a hard, 45 degree-from-camera key light.

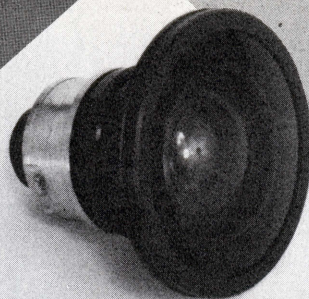
Morris contends that the often conflicting approaches used by various leading cameramen represent the freedom and subjectivity that make cinematography a great profession—variations such as why Nester Almendros shoots with no light diffusing filters, while Ossie Morris feels lighting a scene yields only half what can be achieved by adding lens filters. He uses a low-strength single fog filter for every shot in films such as *Moulin Rouge* and *Fiddler* mainly for lower saturation and enhanced color coordination. Morris also prefers the slightly lightened blacks that a fog filter produces. While many cinematographers go to great lengths to achieve rich blacks, Morris generally finds absolute photographic black to be "hard and harsh." His feeling that hard blacks work against you, demonstrates there can be no rigid rules when it comes to cinematographic style. Sometimes Morris will combine a black or amber net with a fog filter as he did with great results on *Fiddler*, and delineates their separate functions most clearly: "Nets soften line, fogs soften color." One need only consider how hard *Fiddler* or *Moulin Rouge* would appear if shot without filters to realize that

Student lighting exercises which are typical of the hands-on approach of the Tahoe workshops.

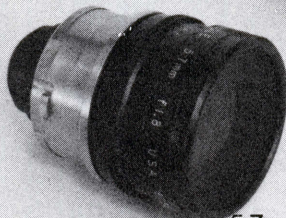


John Betancourt

Century WIDE angles



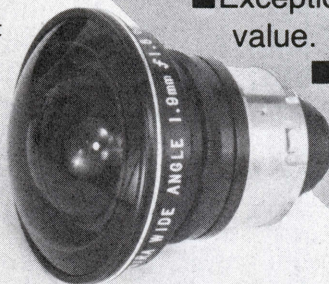
**3.5mm
EXTREME WIDE ANGLE**
Covers the entire 16mm format
with no vignetting. 165° field of
view (diag.).



**5.7mm
SUPER WIDE ANGLE**
Compact lens providing 100°
field of view (diag.).



**10mm
WIDE ANGLE**
Standard 16mm lens yielding
wide angle coverage without
exaggerated perspective
or distortion. 168° field of
view (diag.).



**INTRODUCING the 1.9mm
ULTRA WIDE ANGLE**
Century's new 180° (diag.),
full frame Fisheye.

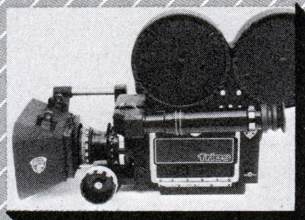
Features

- Available for 16mm film and C-mount 2/3" video cameras.
- Compact and lightweight.
- Rugged and dependable.
- Superb color correction.
- Excellent contrast.
- High resolution.
- Fixed focus.
- Exceptional value.
- F/1.8.

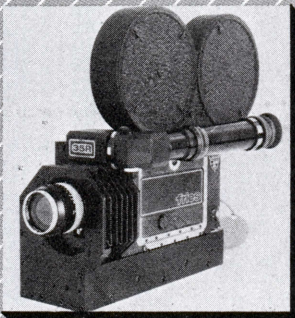
Century precision optics
A DIVISION OF CENTURY PRECISION INDUSTRIES, INC.

10713 BURBANK BLVD., NO. HOLLYWOOD, CA 91601 (818) 766-3715 TELEX: 66-2419

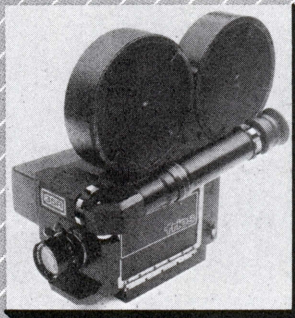
MODERNIZED EQUIPMENT FOR MODERNISTIC FILMMAKERS



35R Beamsplitter reflex conversion to the Mitchell Std./High Speed camera. Features include interchangeable lensmounts, film clip viewing, orientable viewfinder, video assist, high-speed/crystal/single-frame motor.



AF35R Follow focus beamsplitter reflex conversion to the Mitchell Std./High Speed camera for computerized motion control. Features include 4' bellows focus travel, lead screw drive, internal capping shutter, choice of lensmounts, orientable viewfinder, film clip viewing, video assist, and high speed/crystal/single frame motors.



35R3 Rotary mirror reflex conversion to the Mitchell Std./High Speed camera. Features include interchangeable Arri, BNC-R and Nikon lensmounts, orientable viewfinder, video assist, and a high-speed/crystal motor.



120M2 is an "all-in-one" motor for the Mitchell S35R/Mark II. Features include 4 to 120 FPS, crystal 24/25 or 24/30 FPS, forward and reverse, auto mirror positioning, remote single-frame, intervalometer, strobe triggering and TV sync.

MOTION CONTROL

HIGH SPEED

INSERTS

TIME LAPSE

SPECIAL EFFECTS

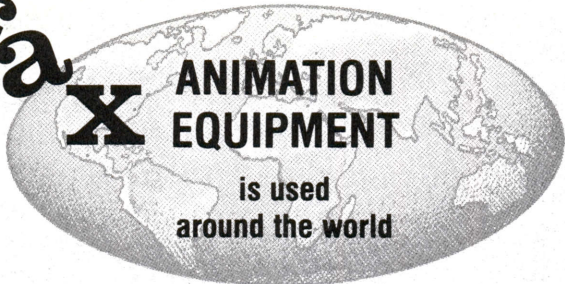
VIDEO ASSIST

Fries Engineering Inc. 12032 Vose Street, North Hollywood, California 91605 Phone (818) 765-3600 Telex 4720922

fries
Engineering

ANIMATION DISCS — LAYOUT TABLES

faX ANIMATION EQUIPMENT



**is used
around the world**

AUSTRALIA	DOMINICAN	PAKISTAN
BRAZIL	REPUBLIC	PANAMA
CANADA	ECUADOR	PHILIPPINES
CHILE	HONG KONG	SWEDEN
COLOMBIA	ISRAEL	TAIWAN
MEXICO	JAPAN	THAILAND

and all across the United States

Animation camera stands — animation discs —
layout tables — bars. We have equipment and
supplies for your use. Write or call

faX company

374 S. Fair Oaks Ave., Pasadena, Calif. 91105 — 213/681-3084

INK & PAINT BOARDS — INK & PAINTS

faX

PAPER — CELS — FIELD CHARTS — AND MORE

faX

fogs and nets are unique in creating feeling and atmosphere which are essential to effective cinema. "Filters, diffusion, color. It's the name of the game."

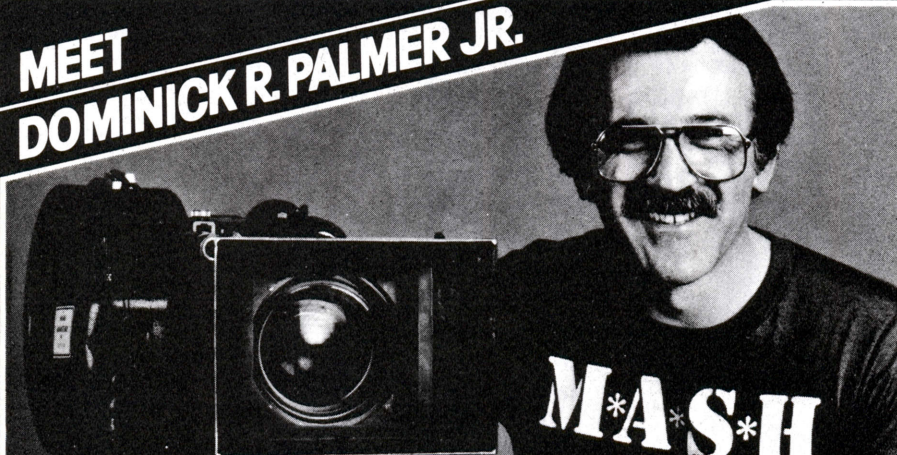
Morris informed workshop cinematographers that when shooting at magic or "mystic hour," later is better. He designed a test for them to shoot a magic hour scene as he did on *Fiddler*. As always, the shot is composed first; then the aperture is set wide open. When the sky reads roughly one stop more light than the aperture setting, shooting begins. Three consecutive takes are done so that the director can choose from slightly bright, middle and deeper-toned takes.

For an interior magic hour scene with a sunset in the background, Morris advises a similar procedure. First the foreground action is lit to maximum aperture. Then determining when to roll is done with the eye by judging when the sky appears to be in the desired balance with the foreground interior. Again, three takes give a selection of sky tones of which one is bound to be pleasing. Morris noted that sunrise shooting can be a bigger challenge. During *Fiddler* he found that since Norman Jewison was such an incorrigible morning person, many sunrise scenes required keeping the company up after a full night's shooting just so Jewison could preside over these scenes with dignity and a healthy attitude.

Having photographed everything he has wanted to, Ossie Morris, lives in happy semi-retirement in Dorset, England.

The Tahoe Film Workshop hosts similar programs in directing, video production, editing, post-production, and still photography throughout the year featuring prominent figures from each field as instructors. Past instructors include Laszlo Kovacs, ASC, Vilmos Zsigmond, ASC, Richard Kline, ASC, Gerald Hirshfeld, ASC, and Andrew Laszlo, ASC. For further information contact: Tahoe Film & Video Workshops, Box 969, Truckee, CA 95734

MEET
DOMINICK R. PALMER JR.



ANOTHER BROOKS GRAD WHO MADE IT TO THE TOP.

As Director of Photography for M.A.S.H., one of history's most highly-regarded TV shows, Dominick Palmer has paved the way for a new generation of creative cinematographers. Where did Dominick learn his craft? Brooks Institute in Santa Barbara, California.

At Brooks, we provide the type of comprehensive education that's designed to bring the best out of our students. You'll learn *all* aspects of film making, including:

- | | | |
|--|--|---|
| ☐ Stage & location lighting | ☐ Directing | ☐ Stage & location sound |
| ☐ Film & video camera technique | ☐ Editing | |
| ☐ Screenwriting | ☐ Production techniques | |

If you're considering a career in film making, first consider how important your education can be to your career. That's why Dominick Palmer chose Brooks. And maybe that's why he's where he is today.

BROOKS INSTITUTE

For information write or call, Director of Admissions, Brooks Institute, 801 Alston Rd., Santa Barbara, CA 93108 (805) 969-2291.

Special Effects

Double Vision Through the Magic of Introvision

"I don't know what the hell they were doing," quips George Burns. "I had no idea what I was doing. I had a thing in my ear, I listened to myself talking, I answered, they took pictures, and then they paid me." For his recent film, *Oh God – You Devil*, Burns found himself returning to the role of "straight" man, but with a difference. Introvision – a unique combination of front-projection, split-screen, and matting techniques which allows for shooting effects shots with actors in real time – made it possible for the beloved comedian to play "straight" to himself. For Burns it was the best of two worlds. "When I played 'straight' in the past I didn't get any laughs – now I can play 'straight' and get laughs, too."

Introvision is a relatively new motion picture special effects process which has been seen to good advantage in *Outland*, *Inside The Third Reich*, *Oh, God – You Devil*, and numerous commercials, although to tell the truth you'll never really notice Introvision at work because unlike traditional matting processes, Introvision allows actors or objects to move both in front of and behind elements in a single background plate without resorting to complicated optical printer compositing. Because of this, it is virtually impossible to tell where reality ends and Introvision takes off.

For Paul Bogart, director of *Oh, God – You Devil*, Introvision presented a welcome solution to a very special dramatic and technical problem.

"To this day," says Bogart, "I don't know how a camera works – and I don't want to know. I need to know what the camera is capable of, but I'm not technically oriented at all. For this picture George was to play both God and the devil, and I knew that all of the traditional techniques of split-screen and back projection would just call too much attention to the pro-



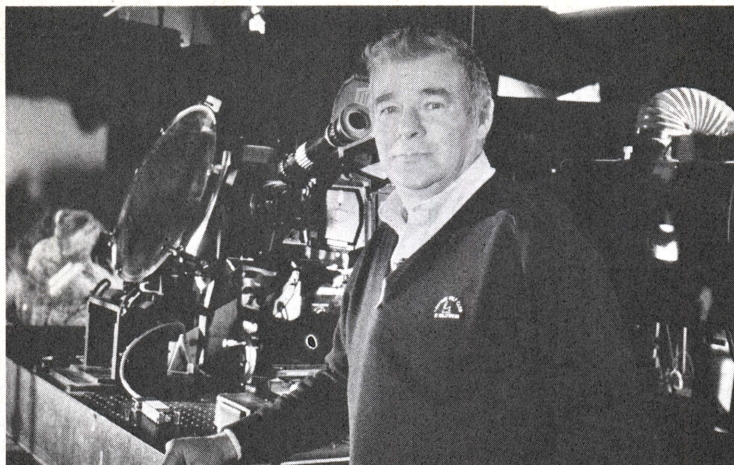
Left: George Burns plays a scene with himself in *Oh, God – You Devil* thanks to the magic of Introvision. **Middle:** Live action combined with miniatures in *The Night They Stole Christmas*. **Bottom:** An Introvision composite from a *Wrangler* commercial.

cess and draw the audience out of the story. But when I saw the Introvision demo reel I didn't look any further. The system seemed to be able to do everything we required with a minimum of special preparation and a maximum of flexibility."

What attracted Bogart was a scene from the TV movie *Inside The Third Reich* in which actors were seen to move and exist in the Reichstag, a building which had been destroyed by fire nearly 50 years ago. They moved not in a set built for the production, but in the actual building (or, rather, a photograph of it). But what was most intriguing was that the actors moved in and around furniture which existed only in the photograph and not on the stage where they were performing.

Bogart was intrigued with the possibility of using Introvision to create a perfect illusion that would allow George Burns to play against himself in a scene without restricting God or the devil to one side of the split-screen or the other. The people at Introvision were anxious to demonstrate the full potential of their system.





"Every script has one description or a couple of scenes that tell you the picture's going to cost money. Take a script like *Blade Runner*. Basically it's a Phillip Marlowe mystery—lots of talk, and lots of interiors; and that really doesn't cost a great deal. But then there's that sentence: 'In the year 2087 . . .'" and you know it's going to be an expensive picture, because you're going to have to create that futuristic world. With Introvision you can create that world—or any other—at a fraction of the cost of building an entire city, and at the same time be able to have all the flexibility you would have on a practical set."

Tom Naud, Jr. is expansive when he talks about Introvision. In fact, he became involved with Introvision at a time when he was seriously considering taking life easy; but the process so fascinated him that he decided to invest in it and become its chief proponent.

"We don't have an invention, as such," continues Naud. "Introvision was developed from existing pieces of equipment with the idea of adapting them to new applications. There have been quite a few additions and modifications since the inventors first came up with the idea. Each project brings its own requirements, and it really could be anyone who could come in tomorrow and send us in a new direction.

"The thing I think is most important is that Introvision is filmmaker oriented. The filmmaker lines up the shot. He can look through the view-

finder and see exactly what he's going to get. He doesn't have to wait for an optical house to composite all the elements, he can see what he's getting right on the stage.

"Basically filmmaking is about human beings. The greatest effects shot in the world isn't going to make people go to the theater. With Introvision we can build whole worlds and put them at the filmmaker's disposal—and that world becomes a fully dimensional environment, not just a backdrop. That's the key to Introvision. That's what we have to get across to the filmmakers.

"I had a production manager in here awhile back and showed him a setup, and his first reaction was: 'That's a lousy example of what Introvision can do. I can build that set on a stage.' Then he realized that what he was looking at was 500 feet wide and 60 feet high, and that even if he could build the set there's no stage anywhere in the world that is big enough to house the set; and even if there was it would cost a fortune to build such a set. Gradually he began to appreciate that Introvision was a tool that he could use.

"For me Introvision is a matter of frustration and of joy. I can't see why anyone couldn't appreciate the possibilities of Introvision—and we're gradually becoming accepted as more and more people become familiar with it. But the joy for me is the same as when I was a kid going to the movies. We're helping to create the magic that can only happen on the big screen." ■

"All of us at Introvision are familiar with all of the other special effects techniques such as blue screen and matte painting," says Bill Mesa, Introvision's director of special effects. "We've worked with them all ourselves, so we do know the problems that are involved in doing them. I think one of the biggest advantages we have over doing foreground miniatures or matte paintings is that we can create the same environment for what is behind the actor as well as what is in front of him. In other words we could have the entire picture be a matte painting and place the actor within that picture rather than trying to match two pieces of film together to make them seem as if they have the same quality of light or color, or the same atmospheric feeling. We're using one piece of film; and even though we split it between two process screens, we are still using only a single plate element, and it comes back to the camera as a single element with exactly the same exposure and density."

The Introvision process actually seems to be a synthesis of some long established motion picture special effects processes. It utilizes front projection along with elements of the early "glass shot" and Shufan process techniques.

Essentially the process plate is projected onto two front projection screens (which are positioned at a 90° angle to each other), by means of a beam-splitter. Glass panes in front of each screen are used to construct complimentary mattes, making it possible for a single process plate to act both as a foreground and background element. The proprietary aspects of Introvision are the unique optics which allow for the matching reflectance returning to the camera from the two screens.

Because Introvision utilizes front-screen, it is possible to see the various elements come together by looking through the eyepiece of the camera and to fine-tune the mattes to insure a perfect match.

As with any front-screen shoot, the process plates must be carefully timed to provide a proper color balance with the new foreground action. "The plates run a little magenta-blue to a normal printing light—maybe about

three points magenta and two points blue over what a normal print would be to compensate for the green in the process screen and some of the green in the glass," Bill Mesa explains. "Basically you have to know what you're shooting as far as projector lens and camera lens goes before you can make a full determination - every plate won't be the same. It has to do with how far away you are from the screen and how many pieces of glass are being used."

One persistent bugaboo of traditional front-projection process - namely the restriction of foreground to background placement of the actor in relation to the front-projection screen in order to minimize harsh black shadows from appearing in the shot - can be alleviated by stopping down the projector to flatten the field and sharpen the shadows (unlike normal projection lenses the Introvision process projector lenses have irises) and by overlapping the plate from the side screen.

For *Oh, God - You Devil* there were some highly intricate shots in a Las Vegas casino with the two Georges playing a game of high stakes poker for the soul of a young rock singer. For these scenes there was a preliminary optical necessary because the script called for the patrons of the casino to be frozen in a state of suspended animation while God and the devil played their hands. In addition, the gaming table where the contest was held existed in the plate and as a practical foreground prop with the matte line running an invisible course across its green expanse. Absolute color and matte line matching were essential to the success of the shots. For cinematographer King Baggott this presented a special challenge.

"It shocked me when we came to the Introvision stage because we shot the casino scenes in Las Vegas on practical locations with inkies and babies at about ten foot-candles. Here we needed a hundred and twenty-five foot-candles in order to have enough stop to cover the screen."

In addition to the technical challenge presented by *Oh, God - You Devil*, Baggott found a special excitement in helping to bring George Burns's

DOUBLE POWER

12V 7AH DUAL BATTERY PACK



The GM12X2-7P: Two Battery Packs in One

- Will run any 12V camera ·
- Ideal for Arriflex III high-speed cameras where two separate 12V supplies are needed ·
- This battery pack delivers 7AH on each side or 14AH combined ·
- It employs a separate charger for each of the two batteries ·
- Comes with automatic cutoff circuits to eliminate overcharging ·
- Rugged ABS case ·
- More power for your money ·

G + M Power Products, Inc.

943 NORTH ORANGE DRIVE LOS ANGELES, CALIFORNIA 90038
TELEPHONE: 213/465-8236 800/621-0849 EXTENSION 132

SUMMER WORKSHOPS

Each summer the world's finest producers, writers, directors, cameramen, cinematographers, editors, and actors gather in a small village on the Maine Coast - to share their work, to learn new techniques, and expand their skills in film and television production. This is the industry's longest running professional workshops. Join us!

The World's Leading Professional Workshops in Film and Video 1985 Summer Schedule

June 2 to 8

The Camera Workshop
The Script Writing Workshop (2 weeks)

June 9 to 15

The Film Lighting Workshop
The Film Acting Workshop (2 weeks)
Assistant Directors/Production
Managers Workshop (4 days)

June 16 to 22

The Film Directing Workshop
The Documentary Film Workshop
(2 weeks)

The Video Editing Workshop
The Sound Recording
Workshop

June 23 to 29

The Steadicam/Panaglide
Workshop
The Film Editing Workshop
The Electronic Cinematography
Workshop

June 30 to July 13

The Film and Video Production
Workshop

Faculty for these workshops are the industry's leading artists and craftsmen. Complete information on instructors, classes, costs, accommodations on campus, travel and tax advantages is contained in our brochure. Write or call us today for your free copy.

The International FILM WORKSHOPS

Rockport, ME 04856 (207) 236-8581

These programs supported by Arriflex.
Additional support from Panavision, Cinema Products, General Camera, ROSCO, Tiffen, Kodak, OSRAM, Lowell, Matthews, JVC, Hitachi, and Silver Cup Studio.

MOVING?

PLEASE NOTIFY US 6 WEEKS IN ADVANCE

Name (please print)

New Address

Apt. No.

City

State

Zip

MAIL TO

AMERICAN
CINEMATOGRAPHER

P.O. Box 2230 Hollywood, Ca. 90028

ATTACH LABEL HERE for address change or inquiry. If you are receiving duplicate copies of AMERICAN CINEMATOGRAPHER, please send both labels. If moving, list new address above.

HOW OUR COMPETITION COLORS THEIR ADVERTISING. IT'S ALL HERE IN BLACK AND WHITE

stage for their message.

WHEN A DYE DIES

Competition takes pride in pointing out that when one of their dyes is discontinued, they develop a new color which virtually matches its antecedent. We'd like to point out that, as in baseball, close doesn't count.

TAKING CARE OF BUSINESS At Lee Filters, we've no time to color our advertising. We're too busy creating colors of unparalleled consistency (some of which are exclusive to us)—gels which match perfectly year after year because none of our colors are ever discontinued.

THE LEE GUARANTEE Naturally, in the event that should you be dissatisfied with any Lee filter, we'll cheerfully replace it. (Forgive us for allowing this Guarantee to slip our minds previously—it's just that no one has ever challenged it.)

NO GRAY AREAS You can see that, to Lee Filters, there are no gray areas when it comes to quality. It's strictly a matter of black and white.



LEE FILTERS

EXCLUSIVE U.S. DISTRIBUTOR: BELDEN COMMUNICATIONS, INC.
534 WEST 25TH ST., NEW YORK, N.Y. 10001 (212) 691-1910

dual characterization to the screen. His grandfather, also named King Baggott, was one of the movies' first great stars, and had portrayed one of the screen's first dual roles in the 1915 Universal production of *The Corsican Brothers*. "It seemed like I was meant to shoot this picture, and really for the first time since my grandfather made *The Corsican Brothers* we were able to bring a whole new dimension to split-screen photography and actually have George cross the matte lines. The illusion on the screen is perfect."

With Introvision it is possible for an automobile to travel through a desert scene on a turn-of-the-century penny post card, or to show Sean Connery performing a space walk against a 500-foot-long space station.

"In the seven or so years since the process was developed it has gone through many stages and transformations. Each project brings its own set of requirements," Mesa continues. "For *Outland* we were able to utilize wide angle lenses—down to a 25mm—something that just isn't possible with most process photography. For *Inside The Third Reich* we made it possible for the filmmakers to shoot "on location" at a site that no longer existed and to provide the illusion of a three dimensional practical working space in which the actors could move. For *Oh, God—You Devil* we were able to design shots that defied all the previous rules of split-screen photography. I'm sure our next project will present us with equal technical challenges."

In the world of audio Ella and Melissa might ask: "Is it real or is it Memorex?" In the realm of visual trickery we might wonder is it real or is it Introvision? ■

Engineering

The Scientific and Technical Academy Awards

Six Scientific and Engineering Awards (Academy plaques) and four Technical Achievement Awards (Academy certificates) were presented at the 57th Annual Academy Awards. Awards in these categories are voted by the Academy Board of Governors upon the recommendations of a Scientific or Technical Awards Committee appointed by the Academy president. The awards are given for "devices, methods, formulas, discoveries, or inventions" which represent valuable contributions to the progress or advancement of the film industry.

This year's committee consisted of 44 industry professionals such as cinematographers, recording engineers, equipment designers, and technicians from major laboratories in the U.S. and England. Joseph Westheimer, ASC, is chairman.

The Scientific and Engineering Awards are as follows:

To Donald A. Anderson and Diana Reiners of 3M Company for the development of "Cinetrak" Magnetic Film #350/351 for motion picture sound recording.

"Cinetrak" 35mm magnetic film incorporates an oxide of superior formulation with a highly polished recording surface, providing a durable medium with extended range, enhanced frequency response, lower distortion and improved signal-to-noise ratio. Excessive wear on equipment is not apparent and the performance of the original material is not compromised by numerous passes over the recording heads.

To Barry M. Stultz, Ruben Avila and Wes Kennedy of Film Processing Corporation for the development of FPC 200PB Fullcoat Magnetic Film for motion picture sound recording.

FPC 200PB Fullcoat is a 35mm magnetic film of improved oxide

formulation applied to a polyester base. The recording medium provides a better signal-to-noise ratio with extended range, enhanced frequency response and lower distortion. Excessive wear on equipment is not apparent and the sound quality of the original material remains true after numerous passes over the recording heads.

To Film Processing Corporation for the formulation and application of an improved sound track stripe to 70mm motion picture film and to John Mosely for the engineering research involved therein.

A new level of sound reproduction for the motion picture industry was achieved through the improvements in the FPC method for striping 70mm release prints, combined with the engineering and quality control specifications of John Mosely. Significant changes were brought to the application of six-track sound to film. Better audibility, less distortion and broader range became available to audiences, while exhibitors were not required to make changes in the existing sound systems of theaters equipped for 70mm presentations.

To Kenneth Richter of Richter Cine Equipment for the design and engineering of the R-2 Auto-Collimator for examining the image quality at the focal plane of motion picture camera lenses.

The auto-collimator is a precision device used for verifying image quality at the film plane of the camera. Resolution targets can be observed as they would appear on the film, whether the film is stationary or in motion, through all apertures of the taking lens, with or without filter accessories. Tests for numerous aberrations can be conducted by the cinematographer, providing an opportunity to avoid costly errors



due to questionable lens resolution during production photography.

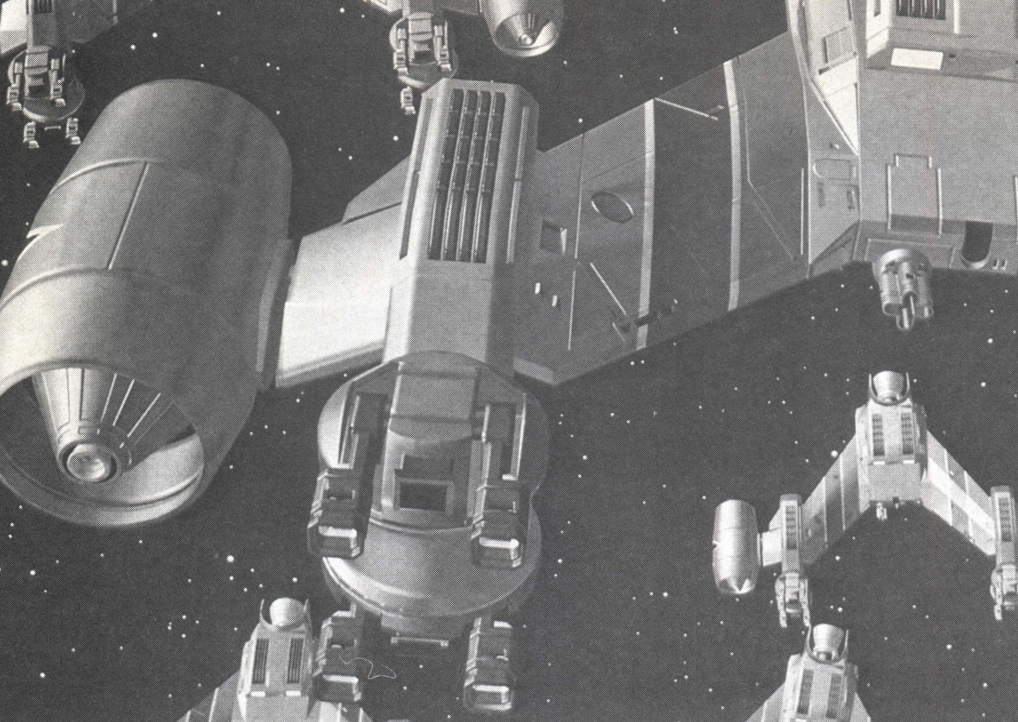
Rosco fog device with new liquid.

To Gunther Schaidt of Rosco Laboratories, Incorporated, for the development of an improved, non-toxic fluid for creating fog and smoke for motion picture production.

The Rosco Fog and Smoke Fluid is a substance which, when atomized, produces a haze of variable density to simulate weather conditions or fire. The vapor does not irritate performers' eyes, skin, vocal chords or clothing and no oily residue remains after dispersion. Evacuation time required to neutralize the atmosphere when petroleum-base chemicals were used has been significantly decreased. Noxious odors are not apparent and the flame-retardant characteristics of the compound provide more agreeable and safer working conditions for production personnel.

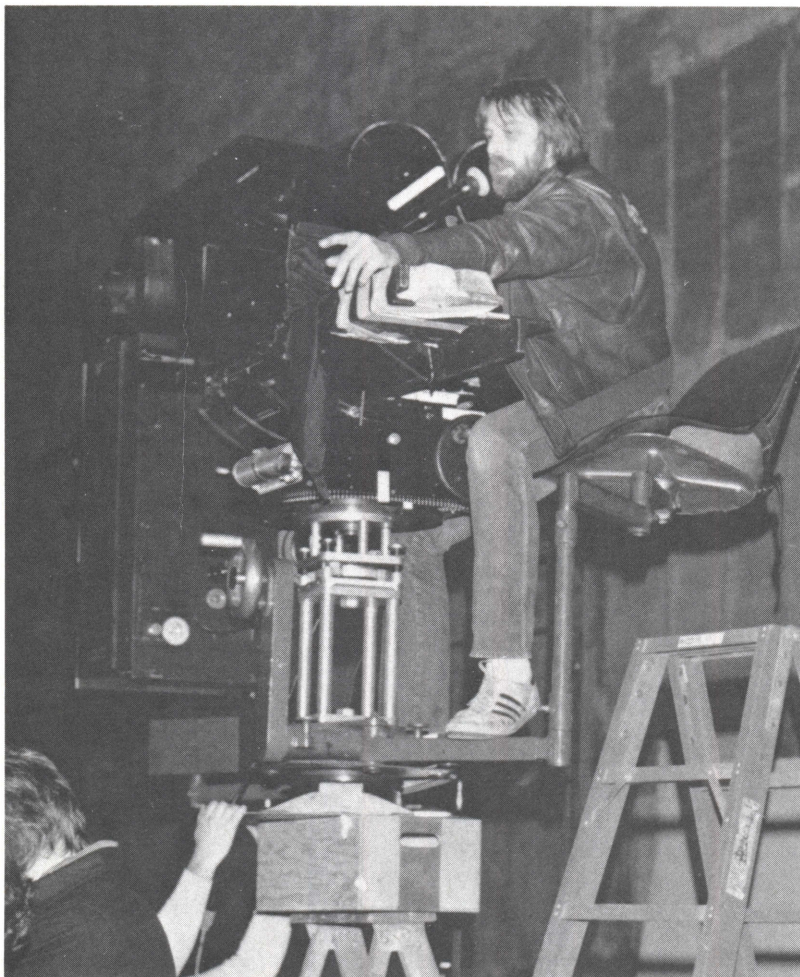
To John Whitney Jr. and Gary Demos of Digital Productions, Incorporated, for the practical simulation of motion picture photography by means of computer-generated images.

Motion picture scenes created by digital scene simulation are



Computer-generated images by Digital Productions from The Last Starfighter.

Making a Blue Max shot at Apogee.



Michael Middleton

originated mathematically and electronically by computer programming. Three-dimensional images of high resolution are stored and can be displayed graphically in two-dimension and in any perspective before they are transferred to film, offering the industry an opportunity to create motion picture segments entirely from the imagination without the physical requirements of sets or props. The action produced can be previewed and altered before a print is made, or it can be called back from the computer's memory at a later date for post-production refinement.

The Technical Achievement Awards are:

To Donald Trumbull, Jonathan Erland, Stephen Fog and Paul Burk of Apogee, Incorporated, for the design and development of the "Blue Max" high-power, blue-flux projector for traveling matte composite photography.

The "Blue Max" is a dedicated light source capable of producing pure spectral lines necessary for applications to special effects photography. Efficient isolation of the color and density required is achieved through the combined use of reflective and transmissive dichroic coatings and a beam-splitter, whereby unwanted light is trapped, rather than transmitted. Incorporated attenuators also offer a wide range of mobility for the projector and the camera, favorably effecting the versatility, creativity and economy of compositing traveling matte scenes for motion pictures.

To Nat Tiffen of Tiffen Manufacturing Corporation for the production of high-quality, durable, laminated color filters for motion picture photography.

Materials of uniform color characteristics are implanted between layers of optical glass and bonded together under extremes of heat and pressure. The outer surfaces are ground and polished to specified close tolerances, free of distortion and resistant to changes in temperature or humidity, then bound with a protective metal ring.

To Jonathan Erland and Robert Bealmear of Apogee, Incorporated, for an innovative design for front projection screens and an improved method for their construction.

The Apogee screen is fabricated of material that has been cut into a particular size and shape, then applied to a background in a prescribed mosaic pattern. Objectionable seams have been eliminated and maximum use of the retro-reflective substance has been accomplished. Restrictions have been removed that previously limited the application of front-projection technology to motion picture photography because of the size of the screen while the range of the technique and the economy it offers have been extended.

To Howard J. Preston of Preston Cinema Systems for the design and development of a variable speed control device with automatic exposure compensation for motion picture cameras.

The Preston Speed Aperture Control is an interfaced unit between the camera motor and the iris of the taking lens. Light corrections are made routinely in response to changes in the frame speed of the camera. The unit is adaptable to a wide assortment of available motion picture equipment and allows the cinematographer to simulate special effects that would be impractical, expensive or unsafe to achieve in any other manner.



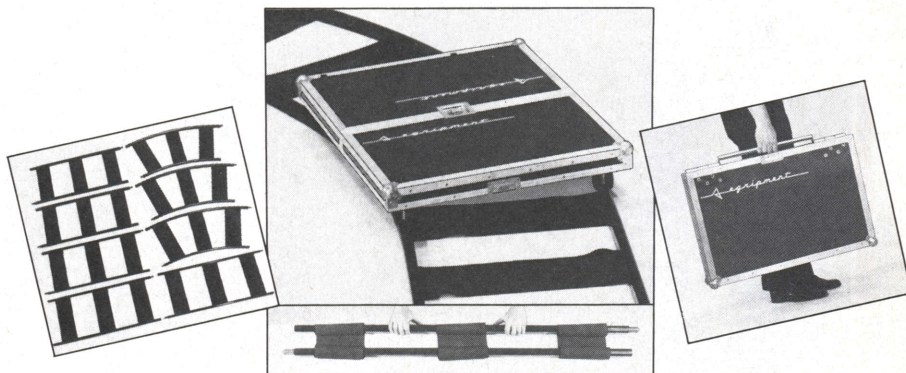
✓ Super Quiet
✓ Super Light
✓ Super Strong

LIGHT-WAVE® SYSTEMS

New Model Range of Slimline Windscreens with the New Model Isolator Cradle Microphone Mounts

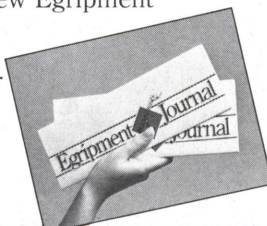
For more information, contact your local dealer, or
Light-Wave Systems
8251 Columbus Avenue, Panorama City, CA 91402 U.S.A. • (818) 893-6796
Dealer Enquiries Welcome

EGRIPMENT HOLLAND



FOCUS TRACK/FOCUS DOLLY

Egripment Focus track is a new concept of tracking and is made of light portable polymer plastic. End clamps are over-latch and made of stainless steel. Focus track will accept all known dollies and is available in straight as well as curved section of 1,5 mtr. (5 ft) long. This new Egripment Focus Dolly has been designed for Focus track, but it will also run on



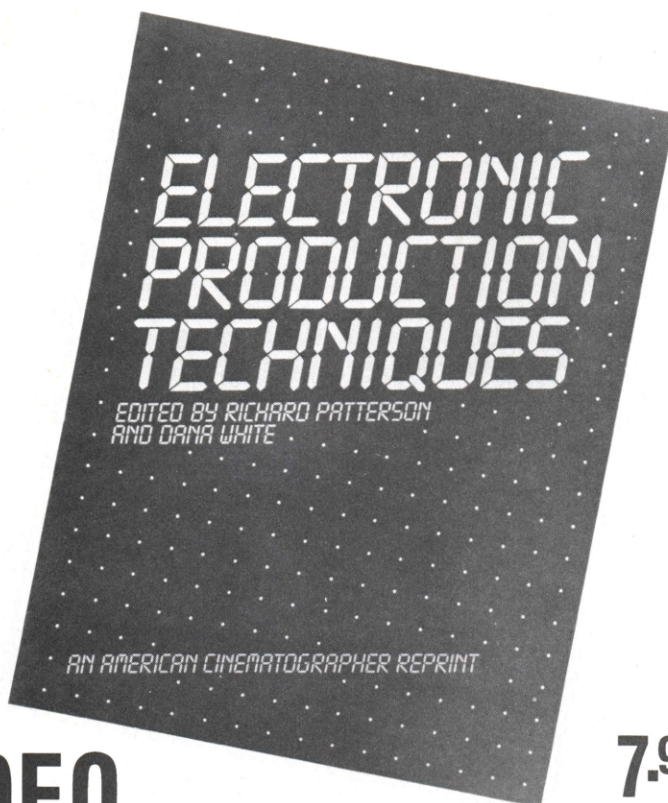
all conventional track. (straight as well as curved). Egripment Focus Dolly will fold into a small flight-case which weighs about 22 kg (50 lbs) including the track wheels.



Ask for detailed information:

EGRIPMENT B.V.,
Machineweg 22,
1394 AV Nederhorst Den Berg,
Holland, Telex 10254 grima nl.
Phone 00 31 2945 3988.

Get the Most out of . . .



VIDEO

7.95

is here to stay! Learn about:
VIDEO CAMERAS . . . ELECTRONIC
COLOR CONTROL . . . FILM TO TAPE
. . . SINGLE CAMERA PRODUCTION
. . . AND MUCH, *MUCH* MORE!

Please send _____ copies of *Electronic Production Techniques* @ 7.95 each.
(Payment with order)

Name _____

Address _____

City _____ State _____ Zip _____

Add \$2.00 per copy for
postage & handling,
2.50 foreign, Calif.
residents add 52¢ State
tax

American
Cinematographer
PO BOX 2230, HOLLYWOOD, CA. USA 90078

American
Cinematographer
P.O. Box 2230, Hollywood, CA 90078

BACK ISSUES FOR SALE

*Limited Supply

- *Oct 1974 "Film At Expo '74"
- *June 1975 "Day of the Locust"
- *Dec 1975 "The Blue Bird"
- *Feb 1977 "Voyage of the Hokulea"
& "Rocky"
- *Apr 1977 "Network" & "A Bridge
Too Far"
- *June 1977 "Rollercoaster"
- *June 1978 "Big Wednesday"
- *Nov 1978 "The Wiz"
- June 1979 "Days of Heaven" &
"Dracula"
- Aug 1980 "The Shining"
- *Sept 1980 "Shogun"
- *Oct 1980 "Cosmos"
- *Dec 1980 "World's Fair of
Photography"
- *Jan 1981 "The Higher We Fly"
- May 1981 "The 53rd Annual
Academy Awards"
- Sept 1981 "International Film & TV
Conference"
- June 1981 "Clash of the Titans"
- July 1981 "The Lone Ranger"
- Aug 1981 "For Your Eyes Only"
- Oct 1981 "Over the Falls with
Kayak and Camera"
- *Feb 1982 "Heartbeeps"
- Sept 1982 "Special Effects for
"Firefox"
- *Nov 1982 "Hammett,"
"Special Lighting Issue"
- Dec 1982 "Dark Crystal"
- Jan 1983 "ET" & "Gandhi"
- Feb 1983 "Winds of War," 1925
Making of "Grass"
- Apr 1983 "Sophie" and 1956
"The Ten
Commandments"
- *Jun 1983 "Return of the Jedi,"
Making of "Flash Gordon"
Serials
- *July 1983 "Jaws 3-D"
- Aug 1983 "Krull"
- *Sept 1983 "War Games"
- Nov 1983 "The Right Stuff"
- Dec 1983 "Scarface"
- Jan 1984 "Gorky Park"
- Feb 1984 "Silkwood"

Some pre-1970 copies available at \$10
per issue. Call for information (213)
876-5080

CIRCLE ISSUES DESIRED.
SEND \$5 + 50¢ POSTAGE
PER COPY TO:

American Cinematographer
P.O. Box 2230
Hollywood, CA 90078

Camera

Single Reel 70mm Stereographics 3-D System

In an attempt to overcome the shortcomings of prior stereoscopic motion picture systems Stereographics Corporation of San Rafael, California is offering a 65/70mm system which can fulfill the needs of both theatrical and exhibition filmmakers of the world's fair variety. The system is compatible with the existing 65/70mm infrastructure. No modifications need to be made to standard cameras or projectors.

Unlike previous 70mm stereoscopic systems, the camera optics will fit on 65mm Panavision equipment, and the projection lenses will fit on any 70mm projector. The format, which uses the standard 5-perf pull-down for 70mm, places the stereo pairs side by side in the area usually devoted to the single wide aspect ratio 70mm frame.

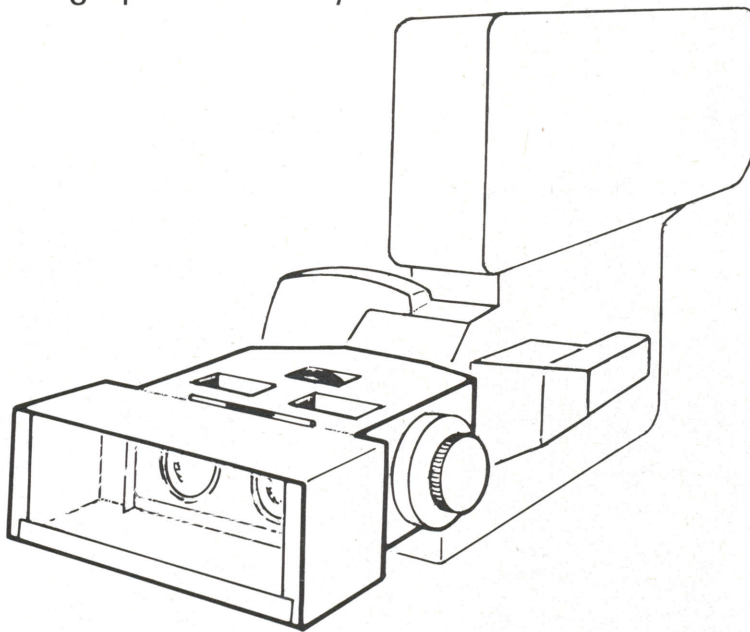
The left and right perspective viewpoints of the stereoscopic image are laid out adjacent to each other, in two frames, 87" high by 95" wide, separated by a narrow boundary line. Because producers and audiences favor the wide aspect ratio, the images are anamorphically squeezed in the horizontal direction by a factor of two, as is the industry standard for 35mm theatrical films using, for example, Panavision lenses.

When projected back through the appropriate optics, the images will have the standard 70mm 2:1 aspect ratio, so that the 70mm screen will be filled with the panoramic image that audiences are accustomed to. The result is similar in quality to using two synchronized 35mm cameras with high-grade anamorphic lenses, and two 35mm projectors with 'scope projection lenses, running in interlock, but with the convenience of having both images on a single reel of film.

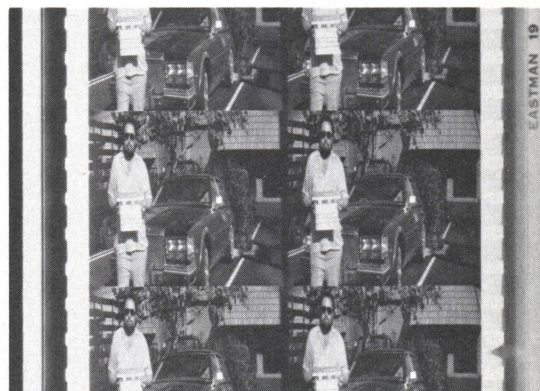
The format can have even better quality than interlocked 35mm, since the 35mm frame is pulled down a height of only four perfs, and the 70mm

frame is pulled down a height of five perfs. Accordingly, the 70mm format is 20% taller than the 35mm 'scope format, with about a 30% increase in image area. Looking at the new anamorphic 70mm three-dimensional format, we see an effective utilization of the existing release print with channels of magnetic sound, and a stereoscopic image packed from perforation to perforation.

The camera lens specifications were laid down by Stereographics Corporation and the optics were designed by Chris Condon and built by his company, Stereovision International, Inc., of Burbank, California, probably the most experienced manufacturer of stereoscopic motion picture hardware. The lens has a speed of T/2.8 and stops down to T/32, with a 32mm horizontal focal length, producing a horizontal angle of view of approximately 40 degrees. The lens can be focused and converged to less than five feet, and the interaxial separation, or distance between the lenses, is four inches. The optic may be mounted on Panavision 65mm cameras.



The configuration of the 3-D optics on the standard 65mm Panavision camera and a sample of the side-by-side frames on the 65mm film.

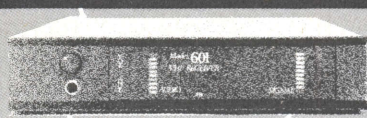


If the demand warrants, other focal lengths will be produced in the future. Right now, a variety of focal lengths of projection lenses are available to superimpose, polarize, and unsqueeze the side-by-side images, for stereoscopic projection in the 2.2:1 standard 70mm aspect ratio.

To a large extent, the present design is a reaction to the defects of existing stereoscopic motion picture hardware and systems. The 35mm above-and-below format, which uses essentially two two-perf-high long and narrow Techniscope frames, has a number

Nady VHF. The best sounding wireless is now also the most user friendly.

NADY 601 VHF RECEIVER



NADY 701 TRUE DIVERSITY RECEIVER



NADY 501 VHF RECEIVER — OUR NEW AFFORDABLE VHF SYSTEM

DIMENSIONS:
2.8" x 2.6" x
1.0"
WEIGHT:
2.6 OZ.



601/701 LT
TRANSMITTER BODYPACK
IS THE SMALLEST IN THE BUSINESS.
INCLUDES PHANTOM POWERING
FOR ANY LAVALIER MIC.

501 LT TRANSMITTER WITH LAVALIER MICROPHONE



501 HT AUDIO-TECHNICA PR-60 ELEMENT
DIMENSIONS: 8.75" x 1.44", TAPERED
WEIGHT: 8.5 OZ.



601/701 HT WIDE CHOICE OF POPULAR ELEMENTS AVAILABLE



HANDHELD MICROPHONE/TRANSMITTERS

Virtually all of today's major touring entertainers choose Nady VHF wireless microphone systems. Why? Because Nady consistently delivers the highest quality audio and the most reliable radio transmission in the high SPL environment of the performing stage. We pioneered the use of compansion for increased dynamic range years ahead of everyone else. And Nady technology continues to set the standard in wireless system performance.

From our affordable new 501 VHF to the 701 True Diversity system, the best sounding wireless is now also in the best format for production—as well as stage—applications. Features include a versatile audio output arrangement, full LED status indicators, and the smallest, toughest transmitter bodypack in the business. Everything you need in a wireless microphone system—plus the legendary Nady sound.

Contact your sound equipment supplier and arrange for a Nady VHF demonstration. You'll see—and hear—what we mean.

NADY SYSTEMS, INC., 1145 65th STREET, OAKLAND, CA 94608 • 415/652-2411
CANADA: HEINL ELECTRONICS, INC., 14 MARY STREET • UNIT 1 • AURORA, ONTARIO L4G 3W8 • 416/727-1951



of shortcomings. The frames are small, and it is no simple task to project a bright and sharp image on a normal theater-size screen using this format. The experience of 1983, with a number of theatrical releases, showed that only in exceptional theaters was it possible to present an acceptable quality stereoscopic image using the above-and-below 35mm format. An added bonus for the 70mm format is that, unlike the 35mm above-and-below format, a misaligned frame-line adjustment will not produce pseudoscopic or inside-out images.

On the other hand, existing stereoscopic 70mm systems, which are essentially world's fair or special exhibition systems, employ synchronized 65mm cameras and interlocked 70mm projectors. They are costly to operate because they use twice as much film as a normal 65mm production, and the camera rigs are bulky.

While these systems can produce superb results, as has been demonstrated by United Artists Communications and by WED at EP-COT, there are many situations where this approach is, to put it bluntly, overkill. This leads to the format which is the subject of this article. By placing both images on a single piece of 65mm camera film and 70mm release print, with a very effective utilization of the film format's image area, we are able to produce an extremely high-quality stereoscopic motion picture image. The use of anamorphics was dictated by our feeling that the usual 2.2:1 70mm aspect ratio must be maintained.

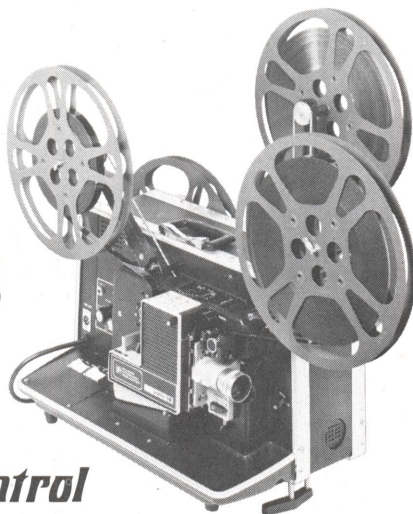
When projected with reasonable care, the resulting stereoscopic image will be exceedingly bright, sharp, with good gradation, and, will present a marvelously vivid three-dimensional effect. There is a growing number of theaters in the United States which are equipped for 70mm projection, because 70mm draws audiences. This new format should gain exhibitor approval because it is easy to use. Because it solves a number of the problems of earlier formats, the Stereographics 65/70mm system could gain industry acceptance and, some day, become a standard motion picture production format.

PALMER INTERLOCK PROJECTORS

**now with
*Dynamic Syne Control***

This exclusive new feature allows picture and magnetic track relationship to be adjusted while the projector is running. Palmer interlocks are dependable, easy to operate, and gentle on all kinds of film. There are four new models for single and double system playback and studio quality recording.

Write for full details.



W.A. PALMER FILMS, INC.

611 HOWARD STREET • SAN FRANCISCO, CA 94105 • PHONE (415) 986-5961

San Francisco's complete 16 mm film service

Camera

The Design and Operation of Skycam

The 1985 Orange Bowl on NBC-TV opened with a perfectly ordinary shot: a close-up of several wildly cheering fans. Then something happened. The unsuspecting TV viewer was suddenly picked up by his suspenders, launched backwards over the railing and out into the vast space over the brilliantly lit football field – an armchair superman diving into the thick of the action. The fans in the upper seats were rapidly left behind as the camera swooped majestically down towards the tiny figures on the 40 yard line . . . rushing up on screen to meet their audience for opening kick-off. Skycam had arrived.

If not the payoff, this was at least the first installment back on an incredible investment of time and trouble: a small group of cameramen, designers and engineers had finally realized a dream, a dream that began five years ago.

Before this broadcast there had been two features, two music videos, a mega-commercial, and several live sporting events. The Skycam had worked on 35mm, 16mm and video productions; it had produced shot after incredible shot, many never seen before. In every conceivable setting, from a small indoor stage to the expanse of the L.A. Coliseum, it had proved to be a fast, efficient, graceful, powerful, truly amazing machine. But it was here, during our fifth national sports telecast, that everything finally came together. The networks had figured out how to incorporate us effectively into their shows and the Skycam proved that it is not merely revolutionary – it's practical.

According to the U.S. Patent Office, the Skycam is a "remote controlled, computer assisted, cable suspended mobile platform for the conveyance of equipment such as a camera." To a cameraman it's much more. It dollies, it booms, it flies, all tripod-steady in a space as large as

1000 feet square and 200 feet high.

Imagine a cube. From each of the top four corners hang a pulley. Below each pulley place a winch. Thread each winch cable up through its pulley and down to the center of the cube. From these four cables now hang a camera. Program a computer to know where the pulleys are located in space. Control all four winches with the computer, control the computer with two joysticks. Now, if you want the camera to boom straight up, pull the elevation stick (or "Z" control) up. The computer will pull in on all four winches and the camera will rise straight up in the air. Now, do you want to truck right? Push the other joystick "X/Y" control) to the right. The computer tells the two winches on the right to pull in, while the two on the left are let out. The camera obediently trucks to the right. Speed is controlled by varying pressure on the sticks, up to 20 miles per hour. Sounds simple, doesn't it? On this level, the space shuttle could be described as a way to lift people and cargo by lighting a big fire in a tube.

Garrett Brown (of Steadicam fame) invented the idea over five years ago. With a small model hung in the kitchen of his Philadelphia home (using thread and sewing bobbins as the cable and pulleys), he proved to himself that his concept had a chance. Armed with that slim knowledge and his usual optimism, he contacted a number of technically gifted friends to help him out. The saga had begun.

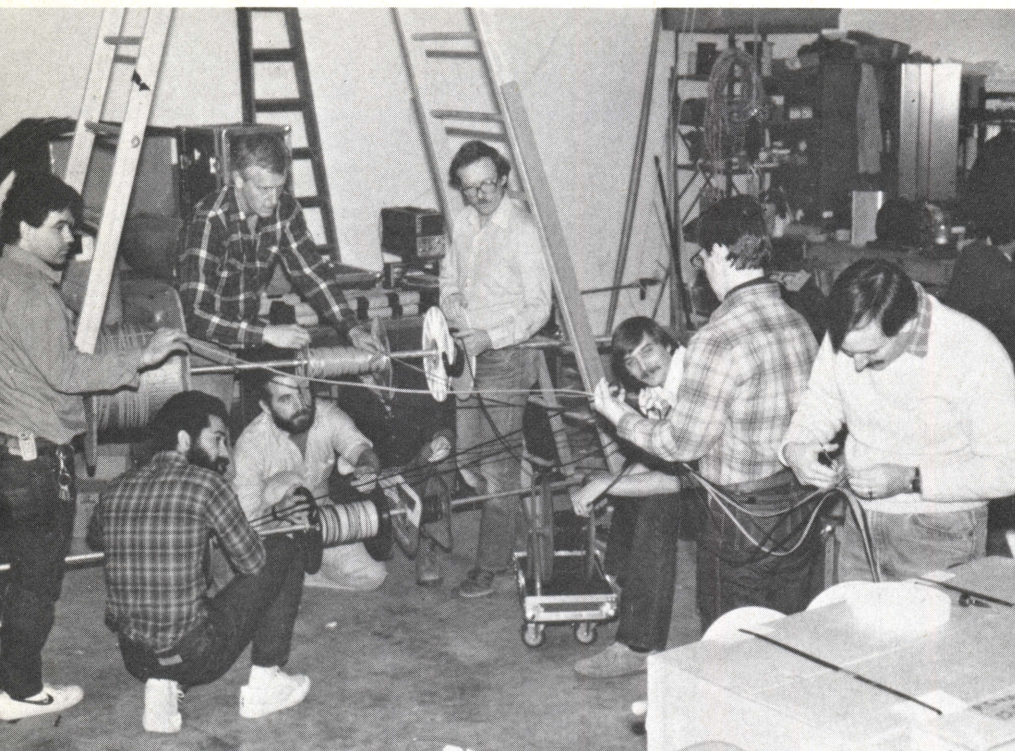
A Steadicam operator, I had known Garrett for several years when he first approached me with his scheme. Dissatisfied with existing systems, I had designed my own radio control for the Steadicam, adapting model airplane parts to do the job. Garrett asked me to be his partner, and work on a control system for the new device. That included everything from



The Skycam flying above a baseball field.

pan and tilt to keeping the camera upright and stable. I readily agreed, and persuaded my longtime friend and assistant cameraman, Tass Michos, to help me.

We soon had several other team members signed on as well. Larry Cone, a software wizard, along with Will Feibel (electronics hardware) had the job of putting a computer and four winches on speaking terms. John Russell, a camera equipment designer on the West Coast, began to machine parts, working from a growing mound of hastily scribbled sketches that arrived



A late night at Skyworks. Making up umbilical cables for the control console are (L to R) Richard Friedman, Larry Cone, Carl Berg, Larry McConkey, Greg Aukerman, Garrett Brown, Bob Shirley, and Ned Lex.

on napkins and other paper scraps from Garrett every other day. Richard Friedman started organizing the business side of the effort and a partnership was formed.

We worked on the project whenever we could. For some that meant spending whatever time was left after our jobs, for the cameramen it meant working on the way to and from location. The first Skycam was designed in basements and hotel rooms, on airplanes and in cars. Somehow, by the spring of 1982, a crude prototype had been constructed.

It was a far cry from the space-age looking device that finally emerged. The current Skycam consists of two discrete systems: the stabilized camera platform itself, and the means by which the camera platform is transported. The transport system can be likened to a dolly or a crane, but it is remote controlled, and can move the camera virtually anywhere within a large three dimensional space with great speed and accuracy.

Imagine that cube again. The four winches each hold 1200' of cable on a drum. The drum is driven by an electric motor, and the cable is guided on and off the drum through a ball-reverser. Its overall appearance suggests a giant motorized fishing reel.

Each motor is powered through an amplifier which is precisely controlled with a built-in computer. These four local computers respond to signals from the main computer at the control console, carried through a disposable multiconductor cable which is strung in a loop around the entire installation.

To fly the Skycam, the "pilot" must first enter the dimensions of the operating space such as the "cube" into the main computer. Sightings are taken of all four pulleys with a surveying transit from a central location inside the cube. The computer then calculates the length of cable needed to reach this location from each of the four pulleys. The camera is carried out to this same location and all four cables are attached to it so that the camera hangs directly above the chosen mark. Now comes the fun part. To move the camera, the pilot in effect "instructs" the computer to calculate the cable lengths needed to reach a different location inside the cube, in this case perhaps, just a few inches away. The computer then commands each winch to adjust its cable length slightly to reach this new "target" location. The camera is pulled over into its new position.

The "instructions" are given to the computer by manipulating the joysticks. Think of it as the world's

biggest 3-D video game and visualize the target as an imaginary dot within the cube. You can change the location of this target, fly it anywhere in the cube you choose, simply by pushing on the joysticks. The computer then commands the winches to move the Skycam to wherever you place the dot. For a dolly move keep the target in motion by pushing the "X/Y" stick to the right and carefully holding it there. The winches are now constantly adjusting their cable lengths to reach the ever-changing target. Fifteen times a second the computer sends out a new command, and 15 times a second, the winches respond. This incremental movement is smoothed out by electronic tuning of the amplifiers, and also by the natural dampening effect of the catenary in the cables. ("Catenary" is the droop in the middle of a suspended cable caused by its own weight). The camera slides smoothly to the right. Whichever way the sticks are pushed, the Skycam will follow. In effect, the Skycam continuously chases a phantom target around the sky.

In the summer of '82 we chased the Skycam prototype across various patches of Pennsylvania sky. Testing was done as discreetly as possible on the weekends at Garrett's old high school. The Skycam flew over the football field, and a workshop was set up in the nearby Home Ec room with soldering irons, oscilloscopes, and battery chargers scattered among the blenders and the toasters.

The motorized winches weren't working yet, so to test the other parts of the system, each cable had to be grabbed by hand and pulled in or let out by running up and down the field. Responding to Garrett's somewhat optimistic directions . . . "truck it left, boom up, then ease to a stop" . . . the four 'human winches' began scampering along the sidelines trying to divine both which "left" he had meant, and which way to run with the cables. The suspended camera would first lurch, then soar above the small field. No one ever knew for sure whether the camera was moving in response to their actions, or in spite of them, but somehow the group collectively willed the object to obey. It was a kind of large scale, outdoor Ouija board with strings.

By fall of 1982, the Skycam was still being hauled around by a very

sweaty ground crew. Cone and Feibel had not yet succeeded in interfacing the computer and winches. The outlook was bleak, particularly when Feibel accepted a job overseas. One night at a party, Larry Cone overheard a conversation and caught the phrase "computer interface". The person doing the talking was John Seitz, a young electronics designer.

John had just started his own company with a new product, a special type of "IEEE 488 interface". Cone quickly realized that this was the means by which Skycam's computer could finally talk to its winches. John made a sale, but that was just the beginning. It started with phone calls from Cone: "can SRQ get me high speed interrupts?" John became intrigued and began asking some questions of his own.

I had just spent the last week working out a critical problem with the pan motor. I had finally decided that 'constant current amplifiers' were the answer. Seitz introduced himself, asked two or three questions, and immediately suggested the same thing. Another partner had been found.

With Seitz aboard, the electronics development began moving fast. The interface problem was solved, and Cone concentrated on writing the computer code. Garrett and I had already worked out a basic plan for the camera platform, now Seitz helped me devise the electronics to do the job. Garrett did the mechanical design for fabrication by John Russell, and the entire group gathered to consider how these multi-disciplinary components could be induced to cooperate.

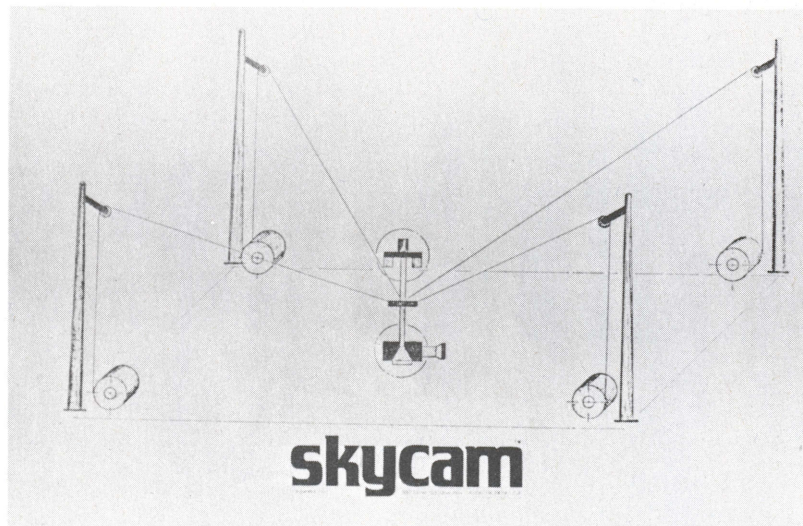
The platform followed a logical development from the Steadicam. Garrett had come up with several original (and carefully patented) ideas for that famous contraption, and many of them were used again. The platform consists of a camera yoke at the bottom, an electronics housing at the top, and a vertical pole (or spar) connecting the two. It stands about five and a half feet tall, the housing is the size of a misshapen medicine ball, and the spar is a long two-inch diameter tube. Midway between the camera yoke and housing, exactly on the center of gravity, is a three axis set of gimbal rings. The whole thing resembles a Steadicam sled in "low mode", or perhaps, a high

tech dumbbell standing on one end, but there's a good deal more involved.

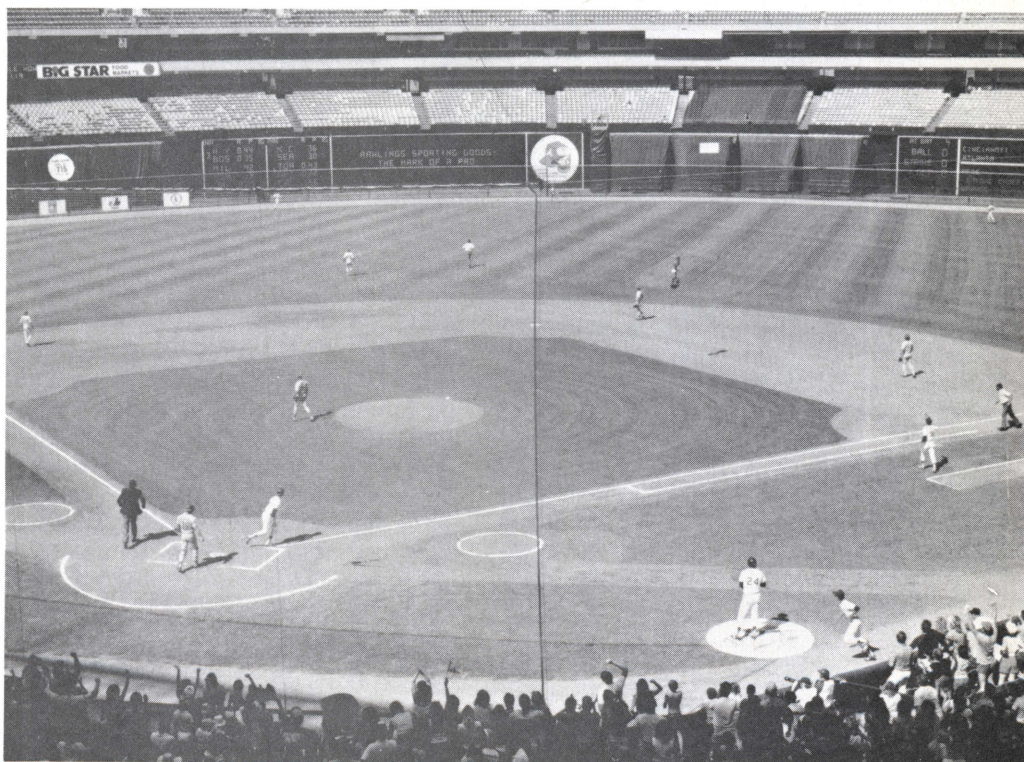
On the Steadicam sled, the two vertical axes, roll and pitch if you like, are controlled by the operator's hand. Bubble levels and a slightly bottom-heavy feel serve to help the operator sense when it's upright. The roll axis controls the attitude of the horizon in the shot and normally the operator tries to keep it exactly vertical. The pitch axis is moved off vertical in order to tilt the camera. The third axis, pan, is controlled by the same hand. It is difficult to master, especially with the inev-

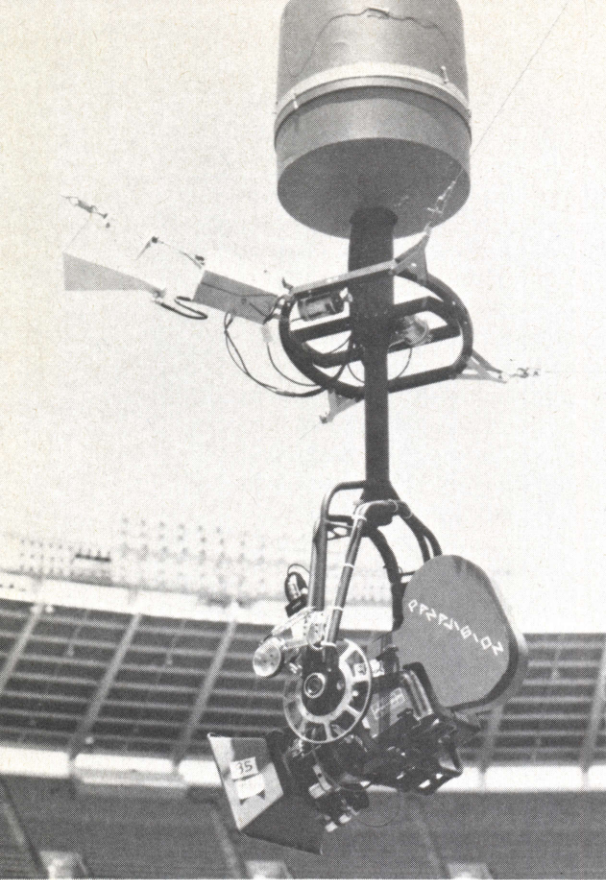
itable interactions between the various axes. A tilt, for instance, tends to affect both horizon and pan. Inertia holds the system fairly steady, and the gimbals isolate the camera from unwanted body movements.

With no "hand-on" human operator, the Skycam employs a two-axis vertical gyro to sense which way is up, and two "constant current" motors to keep itself erect. The two vertical axis gimbals are enlarged greatly from the Steadicam design to squeeze in the motors and gears. The gimbals are free to swing back and forth with the cables

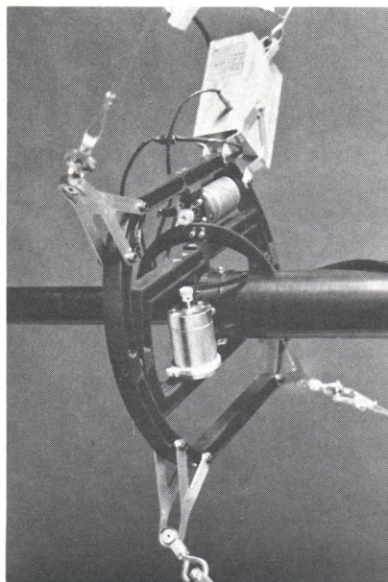


Right: The basic configuration of Skycam in which the camera unit is suspended by cable from four (or three) places with computerized winches. Below: The Skycam hovers near second base prepared to go anywhere within the stadium at a moment's notice.





Above: The Skycam carrying the custom-built Panavision camera, lightest reflex 35mm in the world. Electronics are in the top dome. Right: The heart of the Skycam: Motors drive two large sector gears to stabilize the vertical axes. The box on the right is a miniature microwave video transmitter.



to which they are attached. At rest, the constant current motors and gears offer little resistance, so the inertia of the spar alone causes it to hang undisturbed, despite any twitching of the wires. If the spar begins to tilt away from vertical, however, the motors begin to push gently against the shifting system of gimbals and cables, still without impeding their motion. A tightrope artist maintains his balance on a swinging high wire in a similar way. It's quite

something to see . . . the Skycam sitting balanced and serene in the middle of constant activity.

Inside the set of vertical axis gimbals is a tube within a tube. The spar itself is the inside tube, and the gimbals are attached to the outer one. The outer tube is roughly a foot in length, and 4" in diameter, and sandwiched in between it and the spar lies a motor. This controls the third axis for pan. The camera and its yoke, the inner spar, and the top half of the electronics housing all rotate together. The pan motor is also a constant current design, and here too, inertia resists unwanted motion. A miniature helium-pump rate sensor is used to sense pan, affording excellent isolation and control. The gimbals may be twisted and yanked violently around and the camera refuses to move at all. The Skycam has the smoothest, prettiest pan you can imagine and it stops without backlash or wobble.

The yoke is designed to tilt the camera from straight up to straight down (and beyond if you care to see the world upside down) without changing its center of gravity. There is no interaction of controls. In this case, tilt has no effect on either vertical or pan.

Pan, tilt, focus, iris and zoom are all controlled remotely. Film cameras require a remote on/off switch. Video cameras require lots of other controls – bars, gain, pedestal, colorimetry and gen lock. In either case, a video signal is returned through a small microwave transmitter. Its video source is either the broadcast camera or the video assist cameras used for film. As with the Steadicam, the Skycam assistant and operator must work without the "luxury" of an eyepiece.

By the spring of 1983, prototype #3 was half working, about 25% of the time. Everyone was working under one roof in John Seitz' garage. The camera control and camera transport systems were both starting to show evidence of success, and the word was starting to spread. Garrett got a call from Caleb Deschanel. He was on location in Buffalo, shooting *The Natural* and had heard about the machine. Soon he was on his way to Philadelphia to help with yet another high school test.

Caleb was excited by what he saw and insisted that the Skycam

attempt to shoot on *The Natural*. Garrett readily accepted, reminding Caleb that the prototype wasn't meant for production, merely to prove that the concept was sound. A deal was struck: we wouldn't undertake elaborate shots involving Robert Redford and thousands of extras unless we were happy with the system's operation. Otherwise, we would fold our tent and steal away with no harm done to the production schedule.

Until now the only thing that had "flown" was a small CCD home video camera and not much more weight could be carried. With only a few weeks to go, a 35mm camera was needed, and better video for the remote viewfinder was a must. John Russell promised an Eyemo he would lighten enough for the job. It arrived with even the pressure plate riddled with holes. Only a few weeks before, a contract had gone to Everitt Shiltz. His company was to build the world's smallest, lightest microwave video transmitter – a revolutionary design. He promised it would be finished in time. The CCD camera was pressed into service as a video sidefinder, and the whole affair was lashed up with gaffer's tape and velcro. Our entire inventory of spare parts and tools was packed in a van and driven all night to Buffalo.

The workshop was magically reconstructed in a stadium locker room and last minute building and design work continued. Between frantic soldering sessions, and sudden rain storms, the Skycam flew and the camera rolled. All the systems were working, but seldom at the same time, and our portion of the shooting went slowly. At the end of three days, Garrett called it a wrap. A few insert shots were in the can, but the world would have to wait for a more practical machine. None of the shots made it into the film, but the experience proved that Skycam had a place in feature production. Encouraged, we took the next major step – a company called Skyworks was formed.

It was obvious that everyone's commitment now had to be full time. A building and a larger staff was needed. Garrett decided to bankroll the venture until investors could be found. John Jurgens was persuaded to come from Los Angeles "to visit." Garrett had worked with him at Cinema Products developing the Steadicam and was anx-

HOW DO YOU IMPROVE ON A GOOD THING?



Peter Lisand follows a tough act...

Peter Lisand has learned from its successes. Proof of this can be seen in our two new camera support systems. Our heavy-duty camera head has a 30-50 pound capacity, while the light-duty style holds 15-30 pounds. Here are a few reasons both heads deserve your attention:

- True fluid action maintains a smooth regulated motion by a sensitive system without brake shoes, bands, or other mechanical parts to interfere with its operation. Separate positive locks and drag are featured on the pan and tilt. Tilt achieves a full 90° vertical position.
- Sealed leak-proof chamber assures long-lasting, problem-free operation.
- Adjustable quick-release will counterbalance camera and lens requirements. (optional)
- Versatile control—use right, left or dual handles.
- New reversible foot, rubber-tipped for interiors and standard metal points for outside use, can be ordered with either of the JRA tripods. (optional)
- Tripods come with various top castings to accommodate existing systems.
- Complete the light-duty system with the JRA-83M, a new light-weight tripod that weighs in at 7 lbs., with a total combined weight of 16 lbs.

These Peter Lisand products reflect our highest standards and are backed with our one-year no-hassle guarantee.

Peter Lisand TM [®]
MACHINE
CORP.

352 RIVER ROAD, EDGEWATER, N.J. 07020
Phone: 943-5600 (Code 201)

PRO-MOUNT ...for Viewing Glasses, Stands the Test of Time!

First manufactured in 1939, Harrison's PRO-viewing glass mount comprised all the elements of a professional product: Quality in DESIGN; Craftsmanship in FINISH; Elegance in APPEARANCE; Practicality in USE.

Now, 45 years later, we again offer our top of the line mount, but in a new, larger size. It's still hand crafted in the United States and with its lovely, flexible metal neck chain, you will really stand out in a crowd... a photographer with taste, a professional who knows quality.

PRO-MOUNT is available for Panchromatic, Orthochromatic, Monochromatic, Color, Contrast and Mono Green. (Specify type when ordering.)

See your dealer today, or order direct. Just ask for the type of viewing glass you desire in the NEW Harrison PRO-MOUNT.

Harrison & Harrison

P.O. Box 1797
Porterville, California 93258-1797
Telephone: (209) 782-0121 • Cable: HARALINE

Please send
at \$24.95.

Name: _____

Address: _____

City: _____

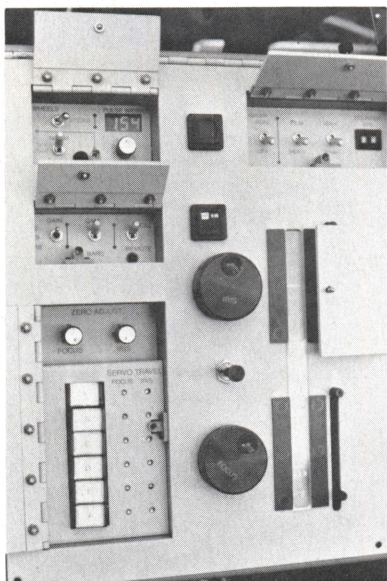
State/Zip: _____

Country: _____

CA Residents
Add Sales
Tax

Viewing Glass in PRO-MOUNT

The camera control console designed by Tass Michos includes everything the operator and assistant need for 16mm, 35mm or video work.



ious to make him the new president of Skyworks and mechanical designer of Skycam. With an extensive background in camera design and manufacture – the Photo-sonics and CP16 cameras were also his “babies” – Garrett felt John was the right man for both jobs. John took a quick look at the machine, and agreed. Six weeks later, Garrett convinced a handful of private investors and a capital venture group to put up one and a half million dollars. We were now a legitimate company with more than 20 souls on the payroll.

The performance of the new Skycam would have to meet professional standards. This meant a radical change in our methods. No longer could a component be dreamed up, designed and built in one day. Every part had to operate with precision and consistency. The goal was a fully working machine for the 1984 Olympics, along with a lucrative and highly visible contract from ABC. A successful debut of this magnitude would virtually insure the future of our company. No matter what the cost or how great the effort, we were determined to finish the Skycam in time.

One person was needed to coordinate the project, and, somewhat reluctantly, I became chief design engineer. John Jurgens led the mechanical team and an avalanche of blueprints kept every milling machine in the county busy, as one design after another appeared. The schedule left no room for miscalculations or adjustments, pieces had to fit the first time. We adapted our

life style and new routines emerged. Dartboard breaks became a ritual, a new refrigerator and coffee machine were installed. “Days” simply became longer and longer intervals between periods of sleep, and had less and less to do with the earth’s rotation.

Late one night, three of us were huddled around a workbench in the otherwise deserted lab, laughing (so help me) because a misplaced wire had just caused 24 hours of work to burst into flames. Two policemen appeared through the smoke with guns drawn, warily approaching us from the open loading dock.

“What are you guys doing?” the officer in front demanded.

Meanwhile, the Olympic deadline loomed more ominously each day. Lights burned around the clock, the checking account displayed signs of red doppler shift, and none of the new systems were working.

There has always been a certain feeling of magic surrounding this project, an indefinable kind of excitement that became almost tangible on yet another night, in the Spring of 1984, when the production Skycam showed its first signs of life. The engineers had gone home and the worklights were off. Tass, Garrett and I suddenly realized that the camera system was finished. Gyros, rate sensors, motors, electronics battery packs, camera, radio receiver, microwave transmitter and the mechanical skeleton that held all this together, the “spar” itself . . . everything that flew.

No cops arrived to see us dance. No one heard us shout. The Skycam, hanging limply to one side on its wires, began to twitch, then slowly raised itself until fully upright. We laughed and shouted like kids.

The lens was set to full telephoto with a 2x extender, the equivalent of a 500 millimeter lens in 35mm, then we shook the wires as violently as we could. The image remained completely stable! It panned like a dream, tilted like a champ. It worked better than any of us could have imagined.

The Skycam missed the Winter Olympics because of a last minute emergency shift in suppliers for the critical PWM’s. It was operational before the Summer Olympics. We even demonstrated it for the Olympic Committee.

But finally, when ABC called to book us, we had to refuse.

One of the last “improvements” had been the replacement of our faithful stainless steel cables with a new space-age composite. It was lighter and stronger – thanks to a core of miracle Kevlar – and contained several copper conductors to carry power to the rig. This kept the on-board batteries fully charged. After a few demos and two feature films, we discovered that the thin copper wires were beginning to “work-harden” and break. We had to switch back to stainless steel and the ground-fault circuits that provide for safe power down the wires had to be re-implemented as well. This took longer than the time allowed. The job was done and we made our network TV debut a week after closing ceremonies!

Investors were disappointed, spirits were low, the money was spent and there was little income so far. Our company staff had to be severely cut to make it through. But we now had a Skycam.

Birdy provided the opportunity for Skycam’s feature film debut, and it promised to be a considerable challenge. Director Alan Parker had imagined shots from a bird’s point of view, swooping then soaring over the main character’s neighborhood. The neighborhood consisted of one entire block in Northwest Philadelphia, and the shots could not be done by any known means, except perhaps, the new Skycam.

Skycam is a relatively safe means of moving a camera above or around people. The total payload is only 40 lbs, and its movements are computer controlled with several levels of fault protection. There is no prop blast or noise. No crew is needed near the camera, and the lens can clear obstacles by inches with relative ease and consistency. In addition, of course, it can virtually “fly” like a bird, anywhere within a large space. After numerous discussions and two demonstrations of the entire system, Alan decided to commission an ambitious inaugural flight for the Skycam.

As pilot, it was my responsibility to figure out how to do the job, direct the set-up, and “fly” the Skycam during filming. I had meetings with Alan and other members of the crew, and I

the DSS-1™

Digital Servo System

Provides total interlocking, internal resolving and speed flexibility (24-25-30 f.p.s.) for your Film and Video Post Production needs. Versatile • Reliable • Cost Effective

A revolutionary concept — the DSS-1 DIGITAL SERVO SYSTEM offers you all the advantages and more of Servo Drive with state-of-the-art performance, versatility and reliability. The Digital Control offers total speed flexibility with variable forward and reverse modes up to two-times sound speed, selects accurate servo drive speeds at 24, 25 and 30 frames per second from reference such as: Internal Crystal, External Bus, Internal Line or External Input. The DSS-1 will lock to 50/60Hz pilot tone - 59.94 video sync - for direct sound transfers, eliminating the need for external "resolvers", and space/power-consuming selsyn interlock systems. With the addition of a tachometer you can interlock projectors, upright/flatbed editors and film-to-tape transfer systems. As an additional feature, the digital display footage counter indicates footage of film in four digits forward or reverse operation. The DSS-1 DIGITAL SERVO SYSTEM is available to you in kit form, complete with the main control unit, digital servo motor/lamp assembly with mounting hardware and cables, ready for field conversion. The sleek control unit occupies only 1 1/4-inches of panel space, providing efficient push-button control of all functions and provides for total remote capability (optional). The DSS-1 may easily be adapted to film recorders, projectors and sprocket-driven equipment and, it is cost effective - the DSS-1 retrofit costs about one-third as much as a new servo drive machine.

from WCA™ west coast audio inc.
NEW ADDRESS
 65 W. East Street #102 Simi Valley, CA 93065
 (805) 583-3800 TELEX #4993652

LAUMIC COMPANY, INC.
 East Coast Representative:
 306 EAST 39th STREET, NEW YORK, N.Y. 10016 • TEL. (212) 889-3300

INTERNAL CRYSTAL REFERENCE selects Internal Crystal
 24 FPS = ± 0.0024 FPS. 25 FPS = ± 0.0025 FPS.
 30 FPS = ± 0.0030 FPS.

EXTERNAL REFERENCE resolves to a 50Hz or 60Hz Line Frequency (rear panel switch selectable) or External Input such as a Neo-Pilot 50/60Hz reference (when an external 1/4" phone jack is plugged in on rear panel).

SELECTABLE 24/25/30 FRAMES
 Selects basic Servo Drive speed at 24/25 or 30 frames per second from reference of Internal Crystal, Line Frequency 50/60Hz or External Input 50/60Hz.

POWER ON/OFF SWITCH applies 120 or 240 VAC $\pm 10\%$, 50/60Hz.

"A" - WIND / "B" - WIND SWITCHES.
 Select "A" or "B" Wind for the Supply Torque Motor to change direction (clock-wise/counter clock-wise). This function is only active when Torque is in the "OFF" mode.

TORQUE SUPPLY (FAST REWIND) Torque Supply
 turns on Supply Torque Motor at approx. 15-inch oz. of torque in "A" or "B" Wind for fast rewind outside of sprocket drive.

TORQUE TAKE-UP (FAST FORWARD) Torque Take-Up will turn on the Take-Up Torque Motor at approx. 15-inch ounce of torque, allowing for fast forward of film motion outside the sprocket drive.

HOLD - FOR NORMAL RUN MODE: In Hold position, the torque motors apply tension to film for proper play-back and record operation; both torque motors are energized while film is in stop condition, minimum torque is applied.

TORQUE OFF Power is removed from both Torque Motors. Mode for loop operation.

2-TIMES SPEED REVERSE MODE 48/50/60 FPS
 activates transports at two times sound speed in reverse mode at 48, 50 or 60 FPS.

REVERSE MODE activates transport at sound speed (24, 25 or 30 FPS) in reverse mode.

STOP MODE will stop transport. Allows minimum torque to supply take-up torque motors.

FORWARD MODE activates transport at sound speed (24, 25 or 30 FPS) in forward mode.

2-TIMES SPEED FORWARD MODE 48/50/60 FPS
 activates transports at two times sound speed in forward mode at 48, 50, or 60 FPS.

SERVO DRIVE
 2 X - REV STOP FWD - 2 X SHUTTLE - STOP

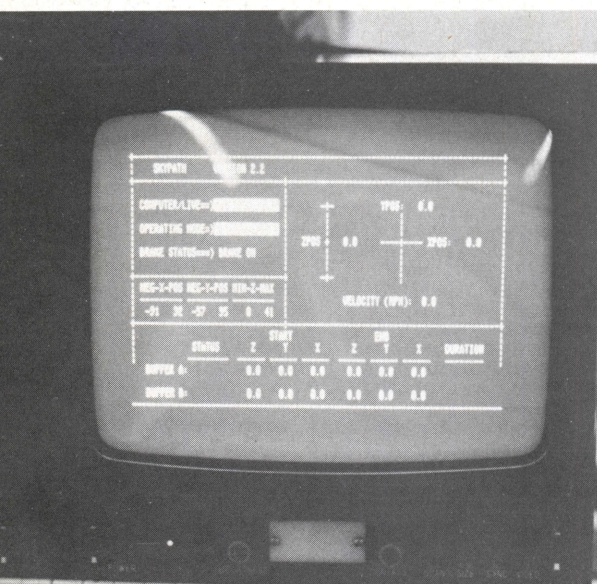
MANUAL INCHING SWITCH disengages Servo Motor when depressed, for exact positioning of film, but is only active when transport is in the STOP mode.

DIGITAL FOOTAGE COUNTER indicates footage of film in four digits for forward operation to 9999 feet.

SHUTTLE CONTROL - KNOB for Reverse/Stop Forward and Variable speeds. Control knob may be preset to within the maximum speed of 16/35mm, and/or allows continuous variable manual operation.

SHUTTLE MODE allows continuous variable speeds Forward and Reverse, from 2 to 90FPS in 16mm and to 60FPS in 35mm, by utilizing Shuttle Control knob.

COUNTER RESET SWITCH resets the digital footage counter to 0000.



The computer graphics display in the run mode for normal flying.

made a quick scout of the neighborhood. Several skeptics on the production informed me Skycam was unsuitable for any kind of location work because "the cables will always restrict the camera from going where it's needed." I had to admit that at least in this location, many things could snag the cables and some of these were the very things I would have to fly close to as well. It was obvious that a great deal depended on exact placement of pulleys. I asked the production's art department to build an accurate three-dimensional model of the neighborhood, with the heights of all pertinent objects represented. This was to include trees, buildings, wires and telephone poles. We provided a miniature mock-up of the Skycam, using a small weight, some thread, and four movable pulley mounts. By experimenting with different pulley positions, I was hoping to figure out exactly where the camera could go, and where it could not.

After careful study of the model, I went back to see Alan. He literally wanted to fly over the entire neighborhood, to create a feeling of majestic, untethered flight. This required pulley positions considerably higher than, and well outside of the existing structures. Construction cranes were located that could reach more than 130 feet high. By parking them in the streets that formed a perimeter around our "set," I could cover an area 500 feet square, and have a lens height that could vary from three inches to 90 feet in the air. There was a vacant lot be-

hind Birdy's house, but where a giant crane might be somewhat distracting. Instead, we made plans to put up a steel tower in the backyard, similar to those carrying power lines in the area, and the art director decided that we could afford to see it in the shot.

The second thing Alan wanted was to fly down Birdy's street a few feet above the pavement, then soar up over the rooftops of the houses along one side. Even though the dimensions of the model proved to be somewhat inaccurate, I was able to determine that this shot wasn't possible without moving the cranes. I would shorten two sides of the square defined by the cranes, into a long rectangle bordering the street. The cables could now drop down along the sides of the houses at a very steep angle, thus clearing rooftops and trees and allowing free movement down the length of the street. We broke the shooting schedule into two parts, one for each configuration, with a day in between for the move.

His final requirement was for several shots flying through narrow back alleys, under trees, close to tall fences, and near houses. That was clearly impossible for the Skycam, but I suggested using my Steadicam for those scenes instead. (Shots from the two machines cut very well with each other, perhaps a natural result of their common parentage.)

The first set-up took a day. The cranes were driven into position and winches installed on them. Data cables were strung between them. Power was tied in. the flying cables were rigged to the center of the block, and after routine testing, the camera platform was mounted. The control console was connected by a 500 foot umbilical cable, and mounted on a portable cart, but finding an operating position was a problem. I needed a location that would allow me to see the Skycam at all times, and not be in the shot. For Birdy, several soaring point-of-view shots were planned, and the entire set could be seen from the air. The only solution was to disguise the cart. A small army of grips materialized and soon transformed the high tech console into an inconspicuous grove of trees. The best view was from the center of the neighborhood baseball field, but that was an unreasonable location for a small forest to suddenly appear. I

backed into a far corner of the field and realized that I would only see the Skycam for a small part of the time. It was clear that I would have to "fly on instruments" for most of the shot, and what's more, I had to get my instrument rating before the next day's shoot.

The next morning, the Skycam crew arrived to discover that overnight rain had caused a problem with one of the winches. As it was being dried out, the camera assistants worked out strategies for dealing with their new piece of gear. The camera was custom-built by Panavision for the Skycam and it is the lightest 35mm reflex in the world. Mike Roberts, the operator, began to get familiar with the Skycam controls. The two of us worked out signals to use during filming, and by afternoon, we were ready to rehearse.

The first shot was for a pivotal scene. In the film, it signifies a dreamlike state, Birdy's first "flight." As Alan described what he wanted, I was excitedly visualizing the shot. . . It begins with a static frame, 80 feet in the air, looking straight down at some kids playing in the middle of a junkyard. Without warning, the ground begins to rush up towards us. The camera is dropping like a rock. A junk car fills the frame at an alarming rate, and then, just before impact, we pull out of the dive. The shot continues, swooping low along the ground, veering left and right around the debris. A fence looms up in the frame. We pull up sharply to miss it, then continue climbing, and just clear the tops of the trees separating the junkyard from the baseball field beyond. Soaring ever higher, this bird's-eye view reveals a lively softball game in progress down below. Its speed now subsiding, the camera floats gently above the field of play.

Despite low line voltage which was causing erratic "flying," I began careful rehearsals, and soon got the hang of it. Michael Serasin, the DP, kept an eye on the failing daylight - we had to shoot!

At the start, the camera was only a dot in the sky, and then it simply dropped out of sight. I immediately turned to the computer screen and tried to decipher the blur of rapidly changing figures which indicated my diminishing height. A split second before "O," I let go of the vertical control, and jammed the horizontal back as far as it would

go. During the pull out, I switched my attention to the camera monitor and used that to navigate the junkyard. Unfortunately, the camera at that point was coming directly towards me, and screen direction was the opposite of my own perspective . . . the controls were now reversed: left was right and right was left. I had further difficulty with cables threatening to snag in the nearby trees. Tass was watching and shouting instructions over a walkie-talkie as he ran.

"More X, more X . . . a little minus Y NOW Z . . . Z . . . Z!!"

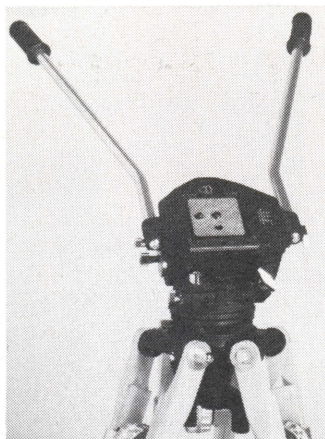
Z was the vertical control, so I knew I must be getting close to the trees. I yanked up on the stick and the camera popped through the branches . . . I could see it again! The rest was easy, and we had one in the can.

The Skycam has a wonderful feature: you can "memorize" a move as you do it, "recording" realtime into one of two "memory buffers." Since the actual path I had taken was almost perfect, I could just "play it back" from the computer, and modify the move somewhat as it was "played back." In this mode, the sticks are used to make corrections in speed and height as the Skycam runs itself through the shot. I can even record this new modified move into the second buffer, then redo it a third time, recording back onto the first one. This process can continue as often as you like, until the final move is defined. In this case, Alan wanted more speed during the first drop. No problem! But there was one factor I did not take into account. It appears that some construction cranes lose hydraulic pressure while sitting, and slowly sink. The three cranes all dropped about a foot between takes and I had memorized a move that went screaming down to less than one foot off the ground. Skycam had an unrehearsed encounter with the dirt.

It was spectacular, or so I was told by several first hand observers: the camera virtually dropped from the sky, then *almost* made a miraculous recovery. The matte box became a very expensive, high speed shovel. All I could see was a brief image in the monitor of junkyard and sky, whirling impossibly around; the walkie-talkie went quiet. The camera merely spun in its yoke, and the vertical system allowed the entire rig to swing back out



Universal



- Cine/Video – News/Documentary
- The "Workhorse" of the industry
- Non-twist, robust tripods & hi-hats
- Two-year warranty
- USA Distributor:
Mitchell Camera Corporation
11630 Tuxford St., Sun Valley, CA 818/7686400

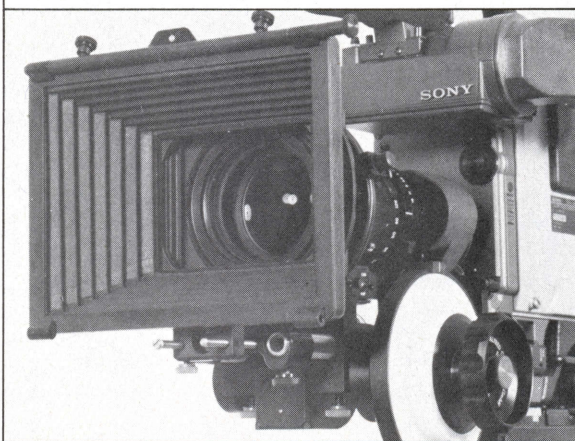
Proven Reliability since 1946

Eric Miller (1900-1976), Robert E. Miller, Victoria A. Miller, Timothy R. Miller

For Further Information please contact

UNIVERSAL FLUID HEADS (AUST) PTY. LTD.

2A CLEMENT ST. RUSHCUTTERS BAY SYDNEY NSW 2011 AUSTRALIA
TELEPHONE 02 331 5789 • 02 331 5786 TELEX AA72395 UNIFLU



VIDEO MATTEBOX AVAILABLE IN 3x3 AND 4x4 FOR ALL ENG/EFP APPLICATIONS ■ FEATURES DUAL FILTERHOLDERS WHICH ADAPT FOR MOST BROADCAST ZOOM LENSES (SERIES 9, 3x3, 4x4) ■ LIGHTWEIGHT, BALL-BEARING MOVEMENT ALLOWS FOCUSING WITHOUT ROTATING FILTERS ■ FOLLOW FOCUS SYSTEM AVAILABLE TO COMPLETE THE FULL ELECTRONIC CINEMATOGRAPHY SET-UP ■ ALSO AVAILABLE, SUNSHADE FILTER ADAPTER AND OTHER INNOVATIVE ACCESSORIES FOR THE PROFESSIONAL ELECTRONIC CINEMATOPHAGER ■

1 3507 W. MAGNOLIA BLVD. SUITE E
BURBANK, CALIFORNIA 91505
TELEPHONE: 818/841-9855
TELEX (CALIF.): 47208 35



The ASC Treasury of VISUAL EFFECTS

By Leading Masters of Film Wizardry

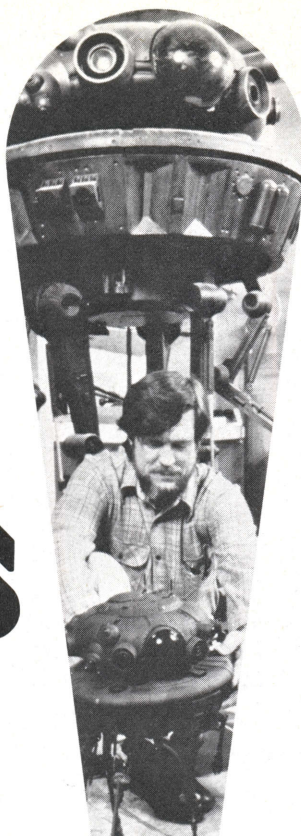
25 CHAPTERS

RARE PHOTOS

300 PAGES

Special chapters written by

L.B. Abbott, ASC • Howard A. Anderson, ASC
Art Cruickshank, ASC • Linwood G. Dunn, ASC • Richard
Edlund, ASC • George E. Turner • Frank Van der Veer, ASC
Harold E. Wellman, ASC • Joseph Westheimer, ASC



of the way, so only the matte box was damaged. It was enough drama for one day. With one good take in the can, we wrapped, and summoned the Panavision repair man from California. The dailies for our "shot" drew a packed house and applause from the crew.

It rained all that night, and into the next day. The Skycam would not work if any of the sensitive electronics got wet. On subsequent shoots we discovered light rain is not a problem; on this shoot we discovered, torrential downpours are a different story. After a while, it was apparent that the rain was determined to stay. I decided to risk the gear and try to fly anyway. Trenches were dug around the winches and console to keep them from floating away, and everything was covered in layers of plastic and gaffer's tape. The camera was kept under an umbrella between takes, and most of the crew stayed indoors. We started to shoot, but the rain caused a frustrating series of delays, as first one piece of equipment, then another, would fall victim to the weather.

Finally the rain stopped, and like magic, everything began to work beautifully again. We were able to lay down several more shots, each more exciting than the last, but then got bad news from the lab. The camera had now also succumbed. It's electronic speed control circuitry was intermittent. None of this last footage was usable.

There was talk of a reshoot, but for now the production had to move on. I was terribly disappointed but at least we had managed the first crucial shot. As it turned out, the production decided against another try.

Caleb Deschanel wanted us in Atlanta as soon as possible. The gear had to be dried out, and the Panavision camera needed emergency repair. If it could be done in time, Caleb would finally get his chance with the machine.

Deschanel was shooting another baseball film. First *The Natural*, and now, *Slugger's Wife*, directed by Hal Ashby. The location this time was a stadium in Atlanta. Caleb and Hal wanted to use the Skycam for several big sweeping shots during crowd scenes with thousands of extras laid on for the weekend. We had arrived two days before, set up in one and spent the other repairing damage left over from the *Birdy* shoot.

Please send _____ copies of *The ASC Treasury of Visual Effects* @ \$29.95 each. (Payment with order)

Name _____

Address _____

City _____ State _____ Zip _____

Add \$2.50 postage and handling per copy USA;
\$5 per copy foreign.
Calif. residents add \$1.95 state tax.

American
Cinematographer
P.O. Box 2230, Hollywood, CA 90078

We picked four equidistant points around the roof of the stadium, and lashed our pulleys there. The skies were sunny and so was the general disposition of the crew.

Jamie Barber, head of the R&D project for the Panavision camera, flew in with his reconstructed "patient," and Saturday we had the camera up, but the crowd was so thin, Caleb was hard pressed to shoot with his land based gear, much less with the Skycam in "see all" mode. On Sunday, the turnout was much better, and we prepared for our first shot.

Tass Michos was pilot and I acted as a kind of "coach" for the operator-pilot-cameraman-director team. For the latter two parties, a different way of visualizing and executing shots is possible, new commands and game plans are helpful. Although operators take to their new controls very easily, they had several new skills to learn. Skycam shots tend to be more complex than the usual fare. Riding on a dolly or crane, one has a kinetic feel of the movement and it's possible to compensate almost automatically with pan and tilt. With the Skycam, however, the operator is even more isolated than with the Louma crane. The camera is sometimes a city block away, which requires taking positional cues from other sources. With practice, the camera monitor yields a wealth of information, but you must also keep an intermittent eye on the Skycam itself (if you can find it!) Signals from the pilot are the greatest help, and the best results come when both people act as one.

The pilot and operator sit next to each other at the control console facing the monitors while the assistant works from the left side, next to the operator. The operator has available all necessary controls for either film or video work. Pan and tilt are operated with an electronic gearhead - the wheels are standard Worrall so the feel is very familiar - or with a very sensitive pressure type joystick. With either method, the "gearing" or gain is electronically adjustable through a wide range of settings.

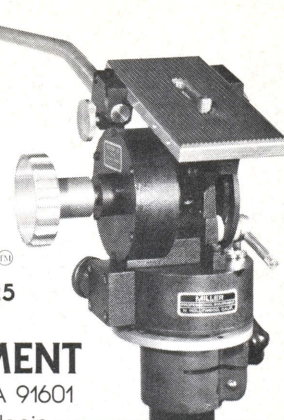
Camera run, focus, iris, and focal length (for zoom lenses) can all be controlled either by the operator or an assistant. Six different lenses can be pre-calibrated with the correct amount

A NEW IMPROVED FLUID HEAD . . .

THE NEW MILEQIP™ NO. M-25 HAS THE FOLLOWING FEATURES:

- Smooth Pan & Tilt Loads Carried on Precision Ball Bearings and Damped by Ultra Smooth Fluid.
- Positive Lock on Pan & Tilt.
- Capacity for Two Handles.
- Tilts 90° in Either Direction.
- Pans full 360°.
- Load Capacity: 30 Lbs.

MILEQIP™
NO. M-25

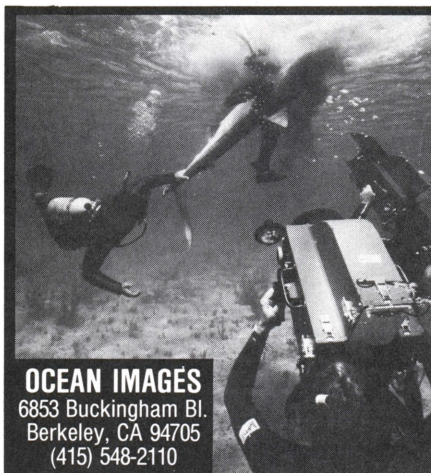


MILLER PROFESSIONAL EQUIPMENT

10816 BURBANK BOULEVARD, NORTH HOLLYWOOD, CA 91601

Phone (213) 766-9451

Cable Address: Mileqip



OCEAN IMAGES

6853 Buckingham Bl.
Berkeley, CA 94705
(415) 548-2110

UNDERWATER PHOTOGRAPHY AL GIDDINGS

Production
Directing
Filming
Stunts/Doubles
Props/Post Prod.

Emmy for
Cinematography
James Bond
For Your Eyes Only
The Deep

Panavision • 35mm • 16mm Equipment

Exciting/beautiful undersea footage and stills for sale.

Over 300,000 feet and 30,000 transparencies of whales, sharks, dolphins, wrecks, coral reefs, kelp, much more.

Rycote

*slide on
slide off*

without any fiddling
with screws
or lining up holes.

*Used by all major Broadcasting
and Film Organisations world wide
for more than a decade.*

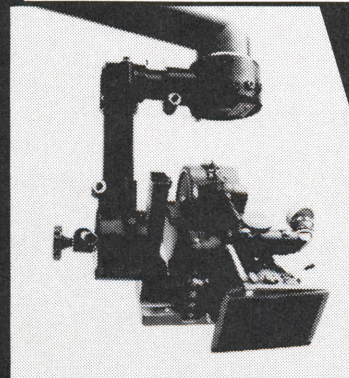


gentle improvements
beautifully made - to last

Rycote Microphone Windshields, New Mills, Slad Road, Stroud, Gloucestershire GL5 1RN, England Tel 04536 79338

THE NEW Weaver-Steadman BALANCED FLUID HEAD

.....WITH VARIABLE GEOMETRY
DESIGNED BY CAMERAMEN FOR CAMERAMEN



FOR INFORMATION WRITE OR CALL :

Weaver-Steadman
CAMERA SUPPORT SYSTEMS

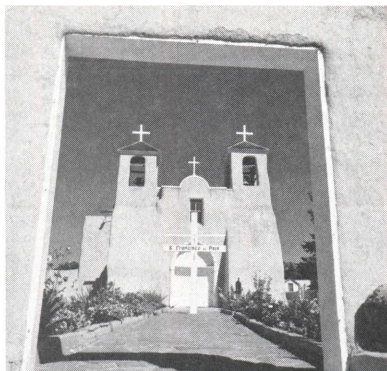
1646 20TH ST. SANTA MONICA, CA. 90404 (213)829-3296

III
Est. 1968

WE'RE MORE THAN PEAKS & VALLEYS



Heron Lake. Photo by Mark Nohl.



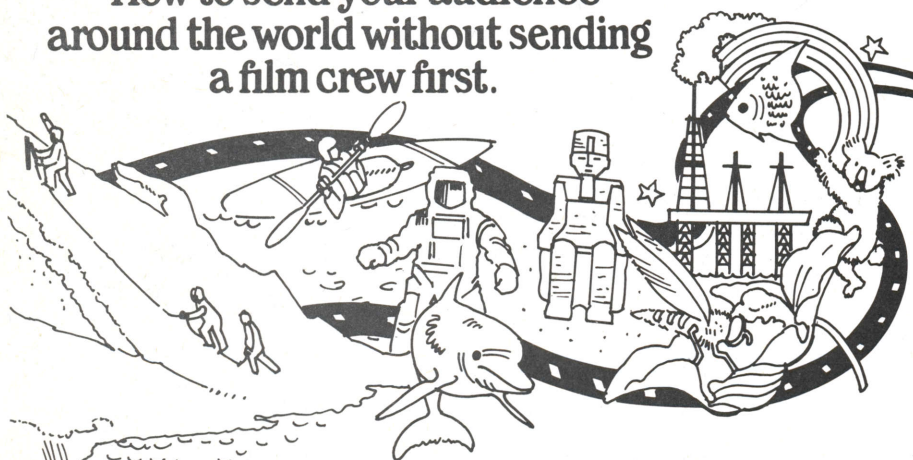
Ranchos de Taos Church. Photo by Mark Nohl.

SHOOT IT IN NEW MEXICO!!!

THE NEW MEXICO FILM COMMISSION invites you to bring your film or video productions to our full-service organization. Call our TOLL-FREE Number: 1-800-545-9871 or write:

SJON UECKERT, DIRECTOR
THE NEW MEXICO FILM COMMISSION
1050 OLD PECOS TRAIL, SANTA FE, NEW MEXICO 87501

How to send your audience around the world without sending a film crew first.



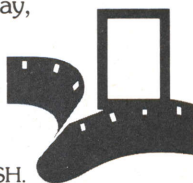
Want to hire a Viking horde? Need an octopus as an extra? Or a crocodile's-eye view of the Nile?

National Geographic is the answer. We've got two million feet of full-color stock footage. Everything from polar icecaps to Polynesia. All with the kind of award-winning quality you've come to expect from us.

Why spend hundreds of hours — or thousands of dollars — getting the shot you want? Pick up the phone right now, and we'll have a 3/4" U-matic videocassette preview on its way faster than you can say, "That's a wrap." And a lot cheaper, too.

National Geographic Society Stock Footage Library

Washington, D.C. 20036. Phone 202/857-7691
Cable: NAT. GEO. WSH, Telex 892398 NAT. GEO. WSH.



of throw and with accurate focus markings for each lens. After that, simply pushing the correct button sets the parameters for any lens you want to use. In general, a video operator will use the joystick and operate focus and zoom by himself, while a film operator will work with an assistant and the wheels. Changing back and forth is as simple as flipping a switch, and this opens up an interesting possibility. You are free to try out one control for a given shot, then switch to the other for a second. No time wasted, and no heavy gearhead to lug back and forth!

The pilot has his hands full as well. To access the Sage computer he selects either the keyboard or the "flight deck." The keyboard is used first for set-up procedures and then to choose between several different operating modes. The primary modes are: TRIM, BOUNDARY, COMPUTER, and RUN.

TRIM is used to bypass the computer and operate one or more winches with a simple joystick speed control. This is most often used to adjust line tensions before flying. BOUNDARY mode allows the pilot to instruct the computer not to fly past certain "boundaries." This can include a minimum height for safety, an obstruction, or even an automatic "soft stop" for a move. When you reach this boundary, the computer will ease the Skycam to a stop at a pre-selected rate. In COMPUTER mode the controls display and computerize all functions normally except that no data is sent to the winches. This is primarily for practice and demonstration. RUN is the normal "flying" mode. Position, speed, boundaries, and memorized moves are all operational.

The memorized function is controlled by an array of five buttons. Finally, close at hand, sits the all important BRAKE button. This locks all winches instantly, and is used whenever the Skycam is parked, or in the event of an emergency.

In the separate "interface" box, are housed the computer, power supplies, data transmitters and receivers, video amps, and intercom. Both cases fit on the portable cart, or next to each other in a fixed location such as a press box.

The press box was where we put the console for *Sluggers Wife*.

From that one position, we could see the entire field. Caleb dubbed the box "Sky Heaven," and whenever a shot involved the Skycam, he and Hal both rode bikes up the ramp to our door. All cameras were tied into a video assist truck with monitors in the press box. Caleb directed the cameras from there, flipping from one to the next on his monitor and occasionally taking the Skycam out for a short whirl himself.

With Skycam the camera is able to follow the emotional and physical logic of a scene, not the almost arbitrary path of straight or curved sections of track. The camera leads Michael O'Keefe (the Slugger) out of the dugout and across to the batter's box. We cross in front of home plate, the umpire and catcher passing through frame, then circle around behind Michael as he takes his stance. We can now see over his shoulder down the first baseline. The camera booms down delicately as the runner takes a lead off base. Michael swings at the first pitch. He slams the ball into right field, and takes off for first with the Skycam close behind. As he approaches the bag, we slow down slightly and take a shortcut across the infield towards second base. The shot is wider now but soon we begin to converge with him at second, making a sudden stop as he pulls in for a stand-up double. The shot finishes on a tight medium shot.

Caleb was delighted. The Skycam can take any course he wants, without tracks. We have control of angle, height and distance at every moment, and this freedom is available anywhere in the stadium within less than 30 seconds! What's more, to use a dolly or crane on the delicate grass, the greenskeeper has to be pacified or distracted and plywood must be laid down. All this takes time and the move is still limited by the available geometry of track.

It is now 1985 and Skyworks shows signs of becoming a real business, with money on the way that will allow us to build the additional Skycams needed to satisfy the ever-increasing demand for our space age butterfly. We have worked out the rules and procedures for shooting football, baseball, basketball, hockey and soccer, and are getting calls for boxing, auto-racing, figure-skating, swimming, rock videos,

Lights to go. Bulbs to go.

Need it now? Get it now!

Come in and carry it out...in New York, New England, and now in Florida, too! Or phone, wire or write for **same-day shipment.**

- **Mole Richardson Lighting Equipment** (exclusive distributors for New York, New Jersey, Florida, Georgia and New England).
- **Bulbs and sockets**—for TV, AV, studio, projection. If they're made by Osram, GE, Sylvania or Thorn...we've got 'em!
- **CSI/HMI lamps, 110/230 volt** in stock.
- **Rosco and Lee Color Media.**
- **We welcome Export inquiries.**

BARBIZON

(617) 935-3920

3 Draper Street
Woburn, MA 01801
(also ind. TV equip.)

(212) 586-1620

426 W. 55 St.
N.Y.C. 10019

(305) 844-5973

1125 N. 53rd Court
Austrian Ind. Pk.
W. Palm Bch., FL 33407

Sockets to go. Gels to go.

OPENING NEW HORIZONS FOR THE FILMMAKER

The 16mm
RICHTER EMP



World's smallest and lightest professional cine camera

Weight: 1 kg. Crystal sync
5 second film change

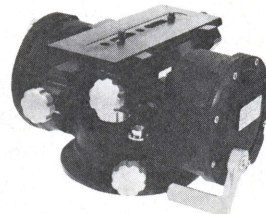
Exceptionally stable film plane
NOW RENT THE EMP FROM

Cine Pro Hollywood
Cine 60 New York
Victor Duncan, Detroit, Chicago, Dallas
Image Devices Miami, Atlanta
Optical and Textile London
Photo Agencies: Johannesburg
Schweitzer Basel, Zurich
Dedo Weigert Film, Munich
or direct from

RICHTER CINE EQUIPMENT, INC.
ESSEX, NEW YORK 12936 U.S.A.
(518) 963-7080

O'CONNOR FLUID HEAD REPAIRS

**ALL MODELS
30-50-100**



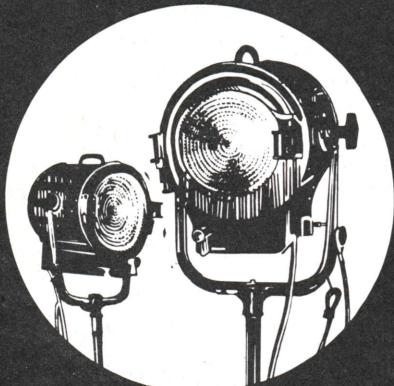
**Highest Quality
Service and Repairs
by Factory Trained
Technicians.**

FAST
turn-around time.
Call or write:
June Sosnow

alan gordon enterprises inc.
1430 N. Cahuenga Blvd., Hollywood, CA 90028
Telephone: (213) 466-3561 • (213) 985-5500
TWX: 910-321-4526 • Cable: GORDENT

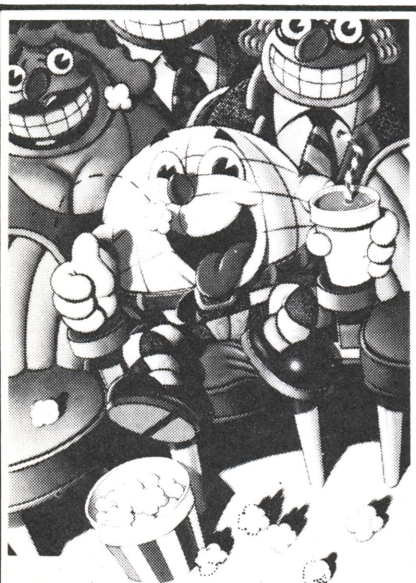
YOUR KIND OF LIGHTS
AT
YOUR KIND OF PRICES!

SOLAR



**LIGHTING EQUIPMENT
DIRECT
FROM
MANUFACTURER
BATIB, INC.**

443 SOUTH VICTORY BLVD.
BURBANK, CA 91502
TEL. (818) 843-7480



LOS ANGELES INTERNATIONAL
ANIMATION
celebration

A Competition and Showcase for
The World's Best Animation

SEPTEMBER 25-29, 1985

For entry blank or info., write: ANIMATION,
2222 S. Barrington, Los Angeles, CA 90064

concerts, commercials, features, stadium motocross, demolition derby, bingo tournaments, smoke writing, banner towing, snow shoveling, and fast food deliveries. We are beginning to think that our machine may indeed have a big future, including semi-permanent installations in arenas and sound stages. Cadres of trained pilots will one day march out of our flight school. And we, the veterans of this struggle, will undoubtedly bore the stripes off each of them with our increasingly far-fetched tales of how it all began.

"It was magic. . ."

Larry McConkey is a director of photography with one recently completed feature and over 20 documentaries of music specials to his credit. He is also one of the foremost Steadicam operators in the country and he is a Skycam pilot. He lives in New York City.

Skycam Technical Descriptions

CAMERAS: The 35mm camera is custom-built by Panavision. It is the lightest reflex design ever produced. Movement based on the Arriflex 2C, but the rest of the camera is entirely new, constructed primarily of magnesium and plastic. Special electronic drive circuit operates with crystal control accuracy without a flywheel. 200 foot mags have a throwback throat. A tiny CCD chip camera is used for video assist (there is no eyepiece). Panavision standard speed spherical and anamorphic lenses up to 75mm can be used. (A special Cooke 18-100mm zoom is also available.)

Video camera is a Panasonic AK-100, the front end of the RECAM. It is a small, lightweight, high quality, three tube camera with a 9.5-117mm zoom lens.

For 16mm a specially modified ACL is used. The eyepiece has been replaced by a small CCD video camera. 9.5-57mm lens is standard. 200 foot mags.

CONSOLE: Horizontal and vertical controls are pressure sensitive joysticks. Pan and tilt controlled either by another 2 axis pressure type joystick, or an electronic gearhead with infinitely adjustable gearing. The radio link utilizes

a state of the art microprocessor controlled Pulse Code Modulated signal (PCM) featuring error checking and correction circuits. The result is eight channels of smooth interference-free control. These include: pan, tilt, zoom, focus, iris, camera on/off, standby-power mode, and for video, cam/bars, and 0/9 db.

COMPUTER: Skycam uses a Sage 2 (Stride Micro) computer. Microprocessor is a Motorola 68000, with 16 bit architecture with 32 bit instruction. The operating program, Skypath, is memory based, disk loaded, and written in Hyperforth. The current keyboard is an RCA 9600 baud terminal connected to an RS-232 port. Control inputs are fed through an IEEE bus using a custom Seitz Technical IEEE Interface. Output is through a second RS-232 port.

DATA TRANSMISSION: RS-232 is converted to RS-422 with full optical isolation and transmitted in "party line" configuration to winches over multi-connector cable (along with headset communications and "cable power"). Standard ASCII codes are used at 9600 baud. It is bit serial coded data including motor address, several motor commands and line lengths.

WINCHES: Driven by custom-built, DC, permanent magnet motors. Servo loop, PWM amplifiers are state of the art, power MOSFET design. Capable of dynamic braking and current limited to 30 amps. Fully isolated power and signal leads. Positional controllers are custom-built using the Motorola 6809, a 2nd generation microprocessor. PROM based system is programmed in assembly language. Provides for monitoring of motor, power supply and amplifier functions. Position feedback supplied by a precision optical encoder.

MICROWAVE: The microwave transmitter is also custom built. It is the smallest and lightest commercial unit in existence. It features broadcast quality, five channel, frequency modulated transmission on the 13 Ghz band. Output is approximately 100 milliwatts through a small, 30 degree aperture, high gain horn. Aimed by mechanical guides on one of the suspension cables. The corresponding pulley carries a similarly aimed receiver horn, and the top part of a custom 2-piece receiver. Two audio subcarriers are available for use with an onboard microphone, and data transmission needs.

Classifieds

Rates: Ads set in lightface type 75¢ per word; minimum per ad \$10. Text set in bold face or capital letters (except 1st word and advertiser's name) \$1.00 per word. Additional \$3.00 service charge on blind ads. Remittance to cover cost MUST accompany copy. Send to Classified Advertising, American Cinematographer, P.O. Box 2230, Hollywood, CA 90078. Deadline for copy is first of second month preceding date of issue. Subject matter limited to items and services pertaining to filmmaking, cinematography, video.

EQUIPMENT FOR SALE

FRESH MOVIE FILM: We stock all types, including 100' Super-8 film. All processing available. **CHAMBLESS CINE EQUIPMENT**, 2488 Jewel, Atlanta, GA 30344, (404) 767-5210.

CANON SCOPIC 16mm, complete, new, excellent, below half price, **ELLIS RALSTON** (219) 456-1594.

USED NAGRAS & STELLAVOXES. 2 NAGRA IV L's, sync, 7" lid, \$3,300 ea. Nagra 4.2 L reconditioned, sync, loaded, \$4,200. New/demo Nagra 4.2 sync, 5" lid, \$5,000. New/demo Nagra stereo IV S, sync, 5" lid, \$6,200. Nagra SN kit, \$1,600. **STELLAVOX**, SP 8, sync, \$2,200. Stellavox SP 8, sync, w/case, \$2,500. Stellavox SP 7, sync, \$2,800. Stellavox SP 7A, sync, \$1,500. Also, large supply of used microphones, mixers & wireless. **AUDIO SERVICES CORPORATION**, 4210 Lankershim Blvd., No. Hollywood, CA 91602. (818) 980-9891.

SCOPIC REPLACEMENT BATTERIES, brand new, only \$48 each! 2 for \$90. Postpaid. **DAN VANCE PRODUCTIONS**, 8690 Aero Drive, M178, San Diego, CA 92123.

1966 DODGE 5-ton grip truck, w/Waltco 2000 lb lift gate, jockey boxes & shelving. 400 Amp AC diesel generator, 60 cyc 3 0 (phase). Star crab dolly. Contact Steve Kurtz, **LEONETTI CINE RENTALS**, (213) 469-2987.

ECLAIR ACL II with all extras, mint condition. (415) 459-2255.

ARRI S PACKAGE: Excellent condition! Includes 2-400' mags, torque motor, constant & variable speed motors, periscope finder, 16/35 batt., Ang. 12-120, 1, 2, 3, diopter attachments., 85, fluorescent filters, Vicon motorized zoom control, 10, 25, 50mm Schneider lens, 90mm Macro Kilar, matte box, Spectra Combi 500, directors viewer, Samcine shoulder brace, F&B Ceco fluidhead tripod, triangle, slate, heavy duty changing bag, heavy duty aluminum camera case. Price: \$3,995! Call **HARRY PREUSCH** (913) 631-5190.

ECLAIR NPR, Ang. 9.5-95mm, 2-400' mags, Beala & Perfectone motors, cases, \$4,900. **O'DOHERTY TECHNOLOGY** (516) 331-1395.

EQUIPMENT FOR SALE

BEAULIEU R16B (PZ) w/Ang. 12-120m f2.2 power zoom lens, built-in auto iris, electric handgrip, 1000mA batt, charger, Halliburton case. Factory serviced. Many other cameras in stock. Contact us for complete list. **CHAMBLESS CINE EQUIPMENT**, 2488 Jewel, Atlanta, GA 30344, (404) 767-5210.

BOLEX CLOSE-OUT! LOWEST PRICES EVER ON USED BOLEX CAMERAS, LENSES & ACC. ALSO BAUER/ARRI-INTERLOCK PROJECTORS. CALL (312) 872-1665 FOR DETAILS.

FOR SALE: OXBERRY motion picture optical printer. Current model like new, loaded with accessories. New replacement cost \$175,000. Make offer. Call (312) 664-3971 or (312) 337-6627.

VIDEO & FILM EQUIPMENT, new & used. Cameras, animation, optical printers, laboratory, accessories. **PIONEER TECHNOLOGY CORP.**, 1021 N. LAKE ST., BURBANK, CA 91502. (213) 842-7165.

STEENBECK EDITING MACHINES FOR SALE. Excellent condition, fully guaranteed. Call **CINERGY COMMUNICATIONS CORPORATION**, 321 W. 44th St., New York, NY 10036. (212) 582-2900.

MITCHELL R35 Mark II new BNCr, hardfront, 1x115v v/s motor 6-400' mags, \$14,500 ONO. Ar-riflex IIc with v/s motor, \$4,000. Ang. 25-250 zoom, \$3,500. Various 16mm & 35mm Mitchell mags, prices on request. **SEACAM INC.**, 7240 Val-jean Ave., Van Nuys, CA 91406. (818) 989-5222.

CUSTOM PHOTOGRAPHICS selling out Behind-the-Lens filter holders for Ang. zoom lenses on 16mm Arriflex, Eclair & other cameras having rotating mirror shutters. Brochure available. \$90 includes postage & handling. 6720 SW Canyon Drive, Portland, OR 97225.

MAGNATECH MD 216 dual dubber, \$2,500-\$3,500. Magnasync 2000 16 deck, \$895. RCA LM99 dual 16mm dubber, \$1,195. RCA FR 10 16/35 3-ch. recorder, \$5,500. RCA opt 16mm recorder, \$4,500. Takita 16mm printer w/B&H butterfly & reader, \$1,500. B&H J w/Peterson sound, \$1,200. B&H J w/Hurletron head & reader, \$1,000. HFC 16-S8 opt printer, \$1,500. CP16A cristasound w/12-120 & mag, \$2,500. Frezzi LW 116 MA11, 12-120, mag, \$1,900. Arri blimp, \$800. B&H JAN 16mm proj., \$295. B&H 302 opt/mag 16mm proj, \$395. Simplex SP portable 35mm, \$795. DeVry semi-portable 35mm projector, \$995. 4-gang synchronizer 35mm, \$250. Catozzo tape splicer, new, 35mm, \$160, 16mm \$175. Hortson, Eastman, Bauer 16mm prof. projectors in stock. Lenses, editing equip, free list. Write **INTERNATIONAL CINEMA**, 6750 NE 4th Ct., Miami, FL 33138. (305) 756-0699.

ARRI-SB, 3-mags, 2 torques, batt, access., \$3,675, Schneider 10,25,50. Ang. bayonet-mount 12-120, \$1,775. 2 Miller-Pro heads, tripods, Mighty-Mole kit, \$700. 16mm editing equipment, more. Contact **MEDIA FOUR**, 4937 Biloxi, N. Hollywood, CA 91601. (818) 761-7504.

LIGHTING FROM HOLLYWOOD

(213) 851-0111

24-Hour
Phone

Mole-Richardson Co.

RENTALS

SALES

and



937 N. Sycamore Ave.
Hollywood, CA 90038



6670 Santa Monica Blvd.
Hollywood, CA 90038



NEW YORK 212-977-9330
HOLLYWOOD 213-466-8101
OUTSIDE CA 1-800-824-3130

BEAUTIFUL FILM FOR SALE

INCREDIBLE AERIALS: Cities, National Parks, Natural Scenics.
NATURE'S MAGIC: Sunsets, Clouds, Unbelievable Waves, Seagulls.
ESTHETIC SPORTS: Windsurfing, Hang Gliding, Sailing, Ballooning, Flying, Skiing, Surfing, Skateboarding, Dune Buggy.

MACGILLIVRAY FREEMAN FILM LIBRARY
Box 205, S. Laguna, CA 92677
714/494-1055

Our credits include: "Jonathan Livingston Seagull," "The Shining," "To Fly," "Behold Hawaii," "Big Wednesday" and many more.

SALES	SERVICE	RENTAL
New & Used Film, Video & Audio Equipment		
Factory authorized Cinema Products sales and service.		
Call Derrick at:		
WHITEHOUSE AUDIO VISUAL		
2037 Granville Ave., Suite B		
Los Angeles, CA 90025 (213) 479-8313		

SUPER BALTAR LENSES

We have the only remaining inventory of
BRAND NEW Super Baltars, from 20mm to
152mm in the world today! Write us or
call for prices.

2025 N.E. 151st St.
No. Miami Beach, FL 33162
(305) 949-9084, 9085

NCE
OF FLORIDA, INC.

CINE SOUND 5

Sound Production Equipment
DEALERS FOR

Beyer Head Sets • MX 80 Mixer
Coherent Comm. Products
Nagra Recorders & Accessories
Sennheiser Microphones
Schöeps Microphones
Micron Wireless Microphones
Tram Mini Microphones
LTM, Micron Microphone Poles
Save Money — Buy from us
3815½ W. Burbank Boulevard
Burbank, CA 91505
(818) 845-6496 — (818) 348-9403

16MM CINE EQUIPMENT

Specializing in Selected New and Used

BOLEX • B&H • BEAULIEU • CANON • KODAK

Cameras and Accessories

Write or Call for Complete Listing

CHAMBLESS CINE EQUIPMENT

2488 Jewel Street • Atlanta, GA 30344
404-767-5210

WE BUY Film Stock Video Cassettes

TOP CASH

PLUS 50% OF SHIPPING

RAFIK (212) 475-7884
814 BROADWAY NEW YORK NY 10003

BOSTON CAMERA RENTAL COMPANY



617 • 262 • 6161

607 BOYLSTON ST.
BOSTON, MA. 02116

Professional Motion Picture Equipment

NEW MOTOR Arri II B & C

- CRYSTAL 24 & 25 Frames
- Variable crystal speeds to thousandth of a frame when used with new CRYSDIAL
- Reasonable price. Year guarantee
- Retrofits for older CRYSDIAL available



(603) 924-7118
Box 525
Peterborough, NH 03458

EQUIPMENT FOR SALE

ARRIFLEX SB w/APEC, high serial number, 10mm f/1.8, 25mm f/1.4, 50mm f/2.0 Schneiders, sync and wild motors, Cine 60 8.4 power pack, Halliburton case, \$4,900. O'Connor 50D, Lisand legs, case, \$1,300. excellent. (914) 764-8558.

CLEARANCE SALE: Brand new frameline generators for video assist. Self contained batt operated, \$500 ea. Intercoms ideal for helicopter & camera car, adaptable for FM radios. Many features, \$950 ea. Body mount, brand new in case, \$8,000. CONTINENTAL CAMERA, (818) 989-5222.

ENGLISH ACL, 2-400' mags, 1-200' mag, Canon 12-120, crystal motor, nicads, case, \$3,200. **VEGA 55/58 wireless mike system**, \$400. (312) 869-7664.

MITCHELL 35 cameras high/standard. 35 upright Moviola editing machine, Moviola 16 library reader optic/magnetic, \$1,600. Arri 16mm \$2,000. M D CINEMA ENTERPRISES (818) 980-4043.

LIKE NEW. Interlocking Magnasync editing equipment. Deluxe Moviola 6-plate flatbed, model M77AH, \$9,500. Sprocket recorder, model 3116 E-2, \$3,500. Will deal on joint purchase. Equipment is in Los Angeles. (406) 862-5484.

MITCHELL WILCAM R16S w/crystal, Ang. 9.5-95 or Canon 12-120 macro, 4 batts, 2 chargers, case, \$2,500 or best offer. Maurer-05, Richardson animation motor, 400'/1200' mags, motors, accessories, \$1,500. Auricon Pro 600 mag/ op. motor, 2-400' mags, amp/batt, charger, \$250. Auricon Pro 600, 400' mag, motor, amp, power pack, charger, case, \$250. Precision 1-gang synchronizer, sound head, \$30. Ediquip 1-gang, \$30. Call PITTSBURGH FILM-MAKERS, (412) 681-5449, P.O. Box 7467, Pittsburgh, PA 15213.

ARRI 16BL package with Ang. 12-120 crystal, 4 mags, single system module, offset finder, 2 batts/charger, cases, excellent condition, \$7,500. (314) 874-2253.

BOLEX H-16S, Pan Cinor 85/2 zoom, viewfinder, Miller fluid head tripod, 35mm Cinebugs, B&H 273 projector, 16mm KVS viewer. Write: COASTAL-K, Box 40603, Jacksonville, FL 32203.

ACL (FRENCH) mint, w/2-400' mags, 12-120 Ang. zoom, converted motor, batts, Halliburton case, \$6,000 or best offer. **ALSO:** 2-400' mags **ACL** & \$1,200 ea. 12-120 Ang. zoom, \$800 very sharp. **CPA** 16mm mint, 9.5-57 Ang. zoom w/2-400' mags, \$2,500 or best offer. (802) 649-5151.

STEADICAM II, 39-lb. arm, fast charger, 5 batts, radio follow focus with 2 motors, many extra modifications & access., \$20,000. KMF PRODUCTIONS (212) 807-6528.

2 KEMS: 6-plate rapid, \$14,000, 4-plate junior, \$13,000. Both with anamorphic, 1:85 picture. Buy both \$25,000. (415) 664-1901 or (505) 758-9749.

ECLAIR ACL, 2 mags, Ang. 9.5-95, \$6,000. Frezzi LW-16, Ang. 12-120, 2 mags, \$1,500. Sachtler shoulder brace, mint, \$400. Siemens 16mm double system projector, \$1,500. CINEMA PRODUCTS XR-35, 2-1000' mags, mint, please inquire. CALL TOLL-FREE, FILMARTS, BOSTON (800) 343-0527.

CP-16RA camera head only \$2,250. J4 zoom control w/motor, \$1,000. O'Connor 30 fluid head, anvil case, wooden legs, spreader, case, \$950. Many other items available, new & used. Please call DER-RICK at WHITEHOUSE A.V., (213) 479-8313.

ARRIFLEX BL with Ang. 10-1, 2-mags, case, complete single system kit w/amplifier, \$7,000. **SHOWCHRON** 6-plate editing table w/little mileage, \$5,700. **ACMADE** 4-gang "Pic-Sync," \$950, all in excellent condition. ED (616) 949-5744.

EQUIPMENT FOR SALE

COMPLETE OUTFIT: Arri 16S, v/s mtr, case, Schneider prime lenses 16.25, Cooke Kinetel 50mm, Ser. 7 ND 0.3, ND 0.6, Quantum calculte meter, filter adapters, sunshade, Tiffen B&W viewer, wood legs, fluid Arri head, Sachtler Spretter, Cine 60 batt belt (new), 2 cables, on-board batt w/charger, shoulder pad. Excellent. \$4,500. SEYMOUR (212) 599-0068.

CP16A SOUND camera w/built-in crystal, sound amplifier, 9.5-95/2.2 Ang., 2 batts, charger, \$1,995. Stellavox SP 7, mono & stereo heads, crystal, \$2,095. Both like new. Special package price for both, \$2,995. (404) 428-6331.

BOLEX SBM, 16-100 vario-Switar POE, Rex-o-Fader 40, \$1,495. **Canon Scoopic 16mm** set, like new, \$1,495. **Kodak Cine-Special II**, 15 f/2.5 Ektar, 25 f/1.4 Ektar, 50 1.6 Anast., 102 f/2.7 Ektanon, 200' mag, 100' back, finders, case, instr. \$795. **Kodak Cine K100**, 25 f/1.9 Ektar, finder, case instr., \$350. **ATLANTA PHOTO SUPPLY**, 79 Walton St., Atlanta, GA 30303. (404) 522-4564. MC & Visa accepted.

B&H MODEL C printer w/tape punch & checker, excellent condition. YALE LAB, 1509 N. Gordon St., Hollywood, CA 90028. (213) 464-6181.

BEAULIEU 6008S sound Super-8 movie camera, \$1,800. (813) 259-1556. EST evenings.

16MM CANON Scoopic M, 2 mags, 3 batts, excellent, like new, \$1,495. (404) 428-6361.

BLIMPED 15KW CRYSTAL CONTROLLED DIESEL GENERATOR, trailer mounted 1000 total running hours: excellent \$9,500. (314) 727-1055.

SONY BVU-110 portable recorder. New condition with less than 30 hours use. Includes BC-210 charger, AC-500 power supply, BP-90 battery, \$3,800. (804) 253-0050.

FOR SALE: One Steenbeck editing table, \$10,000. One Cinemonta table, \$8,000. Call SULLY & FIELD, (202) 775-0990.

J-K AERIAL IMAGE OPTICAL PRINTER. On 5½ ft. lathe bed, with camera, 2 print heads, variable sequencer, LED counters, quartz lamphouse. Exc. cond., \$4,000. (617) 259-9148.

FOR SALE: A COMPLETE 16MM FILM SOUND MIXING SYSTEM. 4 Magna Tech dubbers, 3 Amega dubbers, multi-track magnetics pickup recorder. Phillips 5100EL studio projector with Xenon lamphouse. 3 phase interlock system. MTM footage counter 8, 16, 35, time. Ward Beck 1204B recording console fitted 8 x 4 with full parametric E.Q. (2) sets high/lo pass filters. (2) compressor/limiters. 2 matching producers desks with 24 point wire patch field. TOTAL PRICE F.O.B. TORONTO: \$72,000 U.S. Contact: M. Flanagan, CHETWYND FILMS LTD., (416) 421-8820.

TWO 575w Greatmark HMIs, \$1,500 ea. Includes heads, ballasts, power cables, head cables. (617) 445-4700.

ARRI SR II E, 2-mags, 2 on-board batts, charger, Zeiss f/2.8, 10-100, variable speed control, Arri production matte box & support. Purchased new within the past 6 months, \$26,500. Nagra III recorder in good condition, \$1,000. Leave your number, I'll return your call. (216) 928-8711.

SURPLUS RENTAL EOPT SALE. All reasonable offers considered. 600 Auricon pro with adapter plate to take 1200' Mitchell mag. 200 Auricon. 302 B&H mag/opt proj. 35mm Spyder turret Eyemo with rackover. 16mm continuous sound projectors. (3) 35mm Graflex photo record cameras. 100' capacity, single or double frame. CAMERA CRAFT, 4800 Lankershim Blvd., N. Hollywood, CA 91601. (818) 766-5186.

EQUIPMENT FOR SALE

FREZZI FR 16, standard & orientable viewfinders, auto slate, Canon 12-120, Nikon lens adapter, Arri Universal matte box, 3 PLC 4A mags, excel. cond., \$5,000. Zeiss 12mm T1.3 superspeed \$1,800. Ang. 12-120 w/viewfinder, make offer. Nagra III, crystal, Beyer phones, internal power for Sennheiser mikes, new carrying pouch, \$1,500. Nagra SLO \$800. Magnasync 2200 recorder w/insert electronics, 2 Magnasync 602 dubbers, Kodak pageant interlock projector, control panel, cables, \$2,500. (612) 722-8049, eves.

MOVIOLA M-77AH 16mm torque switches, foot pedal, spare bulbs, 1 HFC 16mm straight, 2 HFC 16mm diagonal, Zeiss Moviscop, rewinds w/tight-winder, swivel base, HFC table w/four tier shelves, 4-gang synchronizer, 8 split reels, other goodies, all personally owned, \$12,500, entire pkg. May divide. Call (312) 885-4661.

NAGRA 4.2 with built-in crystal & resolver, external power supply, leather case, excellent condition, \$4,300. Phone (213) 467-6664.

ECLAIR NPR #3624, 12-120, crystal motor, 2 mags, 2 batts, filters access., A&J cases, excellent, \$5,000. ANDY, (303) 795-9430 or P.O. Box 2794, Littleton, CO 80122.

ARRI BL II w/2-400' mags, Zeiss std primes & housing, Ang. 20-120mm, matte box, bridge plate, bal plate, \$50,000. Arri BL III w/2-400' mags, 1-1000' mag, Zeiss primes, \$65,000. Arri SR I, w/2-mags, 2 batts, charger, hdgr, Ang. 10-150 auto, \$17,750. Arri 16m w/cons sp mtr, 400' mag, batt, case, Ang. 12-120, \$3,500. Bolex 16 EBM, w/Vario Switar 16-100, hdgr, 400' mag, tq mtr, mint, \$1,995. Eclair NPR packages w/Ang zoom, crystal control mtr, 2-mags, clean, v.g., \$4,500. CPR 16 packages w/Ang zoom, CP orient., v.f., 2 mags, clean, v.g., \$4,500. CP 16A, 2-400' mags, Ang. 12-120, 1" finder, \$2,100. NEW LENSES: Cooke 20-100mm, Zeiss 8mm T2.1, Zeiss 10-100mm T2, Ang. 5.9mm T2, Ang. 25-250mm T3.7. Call now for best price. (818) 766-3715. Telex: 0-66-2419. CENTURY PRECISION OPTICS, 10713 Burbank Blvd., N. Hollywood, CA 91601.

1 EA. 9.5-57 Ang. Arri mount, \$1,995. 1 ea. 10-100 Zeiss Arri, \$1,700. 1 Ea. 12-120 Ang. Arri, \$750. 1 ea. 12-120 Ang. C-mount w/1" finder \$750. 1 ea. CP-16 camera 12-120 Ang. 1" finder, \$1,395. All items Al condition, (818) 980-5739.

ARRIFLEX S, super clean 17-85 Pan-Cinor zoom, variable speed motor, cable, batt, metal case, \$2,300. Blimp for Arri S, aluminum, good condition, shipping case & accessories, \$1,200. B&H hot splicer \$360. 8x10 preview Moviola, 1 picture, 1 sound, excellent condition, \$1,325. (414) 962-4445.

NAGRA III, SLO resolver, Sennheiser 804, Sony ECM-50, Rycote 415 windshield, fresh nicads, cables, much more, \$2,500. (415) 236-1369.

FILM, 16MM Ektar MS 7256, 200' ed 11/83, \$15. 50' mags. \$10 ed 2/81. B&W ed 6/75 125' roll \$5. Phone (805) 487-2305.

ACME 104C OPTICAL PRINTER WITH BELL & HOWELL MANUAL ADDITIVE LIGHT SOURCE. Camera components include 35mm sprocket drive, 16mm sprocket drive, 16mm movement, 35mm 400' mag. 16mm 1200' mag, 16mm reflex viewer eyepiece, 35mm reflex viewer eyepiece, 103mm Ektar printing lens, 88mm Ektar printing lens, camera probe scope & prism. Projector components include 2-35mm sprocket drive, 2-16mm sprocket drive, 16mm movement, 35mm movement, slide holder, 2-16mm single roll takeup flanges, 2-35mm takeup flanges, 4-16mm bi-pack takeup flanges, 4-35mm bi-pack flanges, all condensers, mirrors & controls, Piclear wet application system. Bell & Howell lamphouse w/3 Peterson manual light vanes. Price: \$26,500. **WESTERN CINE-DENVER**, (303) 744-1017.

STEREOVISIONTM 3D

35mm and 70mm SYSTEMS

StereoVision is the world's most experienced and best equipped three-dimensional film company. (One of our 3-D productions earned over 28 million dollars at the box office!) Stereo Vision's new wide screen 35mm and 70mm 3-D lens systems are made to fit standard Arriflex 35 and Mitchell (BNCR mount) reflex cameras. We supply all the equipment, the latest technical expertise, 3-D projection kits, and polarized viewers.

Contact Chris Condon at: (818) 841-1127

TELEX: 294187 KING COM-Burbank

STEREOVISION INTERNATIONAL, INC.
3421 W. BURBANK BLVD., BURBANK, CA 91505

BOLEX ACCESSORIES

- 24-Frame Sync. Camera motor 115V
- Va. Speed Battery Camera motor 24V
- 400-ft. Magazine w/400' counter in camera
- Intervalltimer—Range 1½ sec. to 36 min.
- Animation motor. Fits all H-16 models

(714) 650-7299

Write for Bolex Accessory Catalog

STEVENS
402 KINGS RD.
NEWPORT BEACH, CA 92663

We Sell

(A SHIP ON NEXT BUS/PLANE OUT)

Scotch'n Kodak
AFTER HOURS!

FILM STOCK, VIDEO TAPE, AUDIO TAPE, LEADER & SUPPLIES

RAFIK 475-7884
814 BROADWAY, NEW YORK NY 10003

MOVING

When changing your address, please notify us at least six weeks in advance. BE SURE to give your FORMER address as well as your NEW ADDRESS and ZIP CODE.

AMERICAN CINEMATOGRAPHER

P.O. Box 2230
Hollywood, CA 90078

STUDIO LIGHTING
BY

BARDWELL & MCALISTER

WRITE OR CALL FOR FREE CATALOG

BARDWELL & MCALISTER, INC.
7051 SANTA MONICA BLVD.
HOLLYWOOD, CA. 90038
PHONE: (213) 466-9361

DON'T LOSE YOUR HEAD!

We will renew your Fluid Head and overhaul it completely to be BETTER THAN NEW! Write or call us for our super fast service and low prices.

2025 N.E. 151st St.
No. Miami Beach, FL 33162
(305) 949-9084, 9085

NCEO
OF FLORIDA, INC.

**Comprehensive Post-Production
Facilities and Equipment Rental**



Ross-Gaffney, Inc.

21 West 46th Street • New York • NY • 10036
Telephone (212) 719-2744

CANADA'S LARGEST LAB AND SOUND FULL SERVICE ORGANIZATION



BELLEVUE Pathe

MONTREAL
2000 Northcote Ave.
Montreal, Que. H4A 3K5
Tel. 514-484-1186

TORONTO
720 King St. West
Toronto, Ont. M5V 2T3
Tel. 416-364-3894

Pathe Sound Studios
121 St. Patrick St.
Toronto, Ont. M5T 1V3
Tel. 416-598-2521

*A DIVISION OF ASTRAL BELLEVUE PATHE LTD./LTEE

NIL is POSITIVELY NEGATIVE

Color Negative-Positive
Processing Service

Expedited service available. . .

FOR INFORMATION AND
RESERVATIONS CALL

(213) 462-6814

NEWSFILM LABORATORY INC.

516 N. Larchmont Blvd.
Los Angeles, CA 90004



ALAN D. WILLIAMS

3D CONSULTING FOR MOTION PICTURES
3D SYSTEMS DESIGN AND DEVELOPMENT
3D SPECIAL PROJECTS

7451 VIA AMORITA AVENUE, DOWNEY, CA 90241
(213) 927-4884

AATON ANGENIEUX REPAIRS

(ARRI, ECLAIR, BEAULIEU, BOLEX Etc.)

- Factory trained by AATON and ANGENIEUX in France
- 20 yrs experience in motion picture field
- Servicing all major motion picture equipment

SMS PRODUCTIONS, INC.

(Service Center)

100 E. Ohio Street Suite 226
Chicago, IL 60611 312-664-3752

16mm Super—8

Color Reversal Processing
VNF-ME4-ECO
B/W Reversal Processing
Same Day Service
Duplicate Prints
Video Transfer

Write or Call for Price List

YALE LABORATORY

1509 N. Gordon Street
Hollywood, CA 90028
(213) 464-6181

LARRY EDMUNDS BOOKSHOP, INC.

"World's Largest Collection of Books on the Cinema"
NEW AND OUT-OF-PRINT

TECHNICAL FILMMAKING • ACTING
WRITING • DIRECTING • PRODUCING
SCREEN PLAYS • BIOGRAPHY • THEORY
THEATRE • PLAYS • REFERENCE BOOKS
DIRECTORIES, ETC.

MEMORABILIA - POSTERS - STILLS

World-Wide Phone & Mail Orders

VISA/MASTERCARD BOOK LIST AVAILABLE

6658 Hollywood Boulevard, Hollywood CA 90028

Phone (213) 463-3273

WE'RE LOOKING FOR NEW FILMS/VIDEOS TO DISTRIBUTE

For Personalized Attention and
a Liberal Royalty Policy for
Your Non-Theatrical Films/Videos

SPECTRUM FILMS, INC.

2755 Jefferson St., Carlsbad, CA 92008

DAN MERKEL FILMS Action Water Photographer

SPECTACULAR STOCK FOOTAGE
AND STILLS FOR SALE

Emmy Award Winner • ABC • NBC • CBS

American Sportsman • Big Wednesday

Solid Gold • Walt Disney Productions • PM Magazine

Free Ride • Asian Paradise

TV COMMERCIALS

Sunkist • Hawaiian Punch • Old Spice

Coca Cola • Sea Breeze • Johnny Walker Red

Bitter Kas • Cimmaron Jeans • Seiko • Off Shore • Op

Box 722 • Carpinteria • Calif. 93013 • (805) 648-6448

Box 1025 • Haleiwa • Hawaii 96712 • (808) 373-2710

USED EQUIPMENT FOR SALE

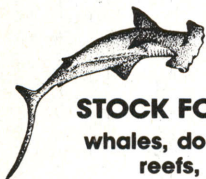
CP16R, Exposure Control, 2 Mags, 2 Batteries, Case	\$ 6,000.00
Arri S, 16, 25, & 50mm Cooke Lenses, Matte Box, Battery	1,500.00
Zeiss Moviscop, Used	200-300.00
Hi-Speed Control for 35BL/35III	1,000.00
O'Connor 50 Tripod Head With Sticks	1,550.00
4 Gang Synchronizer With 2 Sound Heads	300.00
Model 700 Mag Reader	301.50
Moviola M77 6 Plate Flat Bed Editor With Hollow Prism	11,500.00
Steadicam I With 4 Batteries, 4 Chargers, & Cases	12,000.00

CINEQUIPT, INC.

motion picture equipment
rental and sales

2434 University Ave.
St. Paul, MN 55114

(612) 646-1780



WILDLIFE

STOCK FOOTAGE & SLIDES

whales, dolphins, sharks, birds
reefs, fish, aerials, Slo-Mo

HARDY JONES PRODUCTIONS
(415) 332-5410

EQUIPMENT FOR SALE

MOVIOLA FLATBED M-77AH (16mm), 6-plate,
flickerless prism, independent torque motor controls,
3 years old, mint condition, hardly used, \$12,300.
(617) 639-0770, Boston.

**ARRI WIDE angle eyepiece \$575. Arri
PL2C w/motor exc. cond., \$5,300. Arri
studio follow focus, complete, \$900.
Zeiss standard lenses with follow focus
gear, 16mm, 24, 32, 50, 85mm, \$4,600.
16 Zeiss distagon close focusing \$1,300.
One set Zeiss high speed lenses, 18mm,
25, 35, 50, 85mm, T.14, \$10,800. 16SR
2 w/10-100 Zeiss T.2, 2-mags, batts,
case, \$18,200. 16SR, 2 w/10-150 Ang.,
2 mags, batts, case, \$17,000. (213)
469-2774.**

SERVICES AVAILABLE

INDEPENDENT CINEMATOGRAPHER, Experienced
& versatile. Location assignments wanted by week
or project, equipment & assistant, also editing &
conforming. Science, education, high tech or docu-
drama preferred. Special rates for warm climate
work. Call (414) 962-4445.

STEADICAM III owner/operator, accessories. Avail-
able any production. DAVID ROGERS, 1211 Holly,
Nashville, TN 37206. (615) 228-6387.

OFF-LINE VHS EDITING SYSTEMS for rent
in your office or home. Faster & less expensive than
3/4" editing. Call for more information. CHRISTO-
PHER GRAY, (213) 821-0388.

**KINESCOPES: 16mm color, sound from
video (Palmer camera.) TRANSFERS: 8-
S8-16 to video cassette, most speeds, formats.
WORKPRINTS: 16mm Ektachrome 15¢, limited
offer. CRYSTAL: 24/30 your NPR Perfectone
motor. TOBIN CINEMA, 3227 49-SW, Seattle
98116.**

HAVE SOUND GEAR, WILL TRAVEL. Call
MICHAELS (808) 734-3345.

TIME LAPSE LIBRARY: World's first. World's
largest. Over 100,000 feet, 38 years. Almost any-
thing your little pointed heads can think of. Foreign
stock footage also. Experience instead of experi-
ments. Move over Energy. STUART JEWELL, 2040
Garden Lane, Costa Mesa, CA 92627. (714)
548-7234.

**FILMMAKING COURSES ON CASSETTE
TAPES** offered by Eric Sherman, author AFI's "Di-
recting the Film." Film techniques, writing, directing,
film acting, cinematography, editing, aesthetics, mar-
keting & more. For information, write **TAPE
COURSES**, Box 845, Malibu, CA 90265.

**ECLAIR, BOLEX, AATON, FACTORY
TRAINED** service available at **PROCAM, 905
North Cole Ave., Hollywood, CA 90038.
Phone (213) 464-2125.**

**BATTERY REBUILDERS, ALL TYPES.
FILM, VIDEO & photographic. CRYSTAL
SYNC your Canon Scoopic or Beaulieu,
\$425. CHAMBLESS CINE EQUIPMENT,
2488 Jewel, Atlanta, GA 30344. (404)
767-5210.**

SURPLUS CAMERAS & LENSES WANTED: Send us
your tired, your worn 16mm & 35mm Mitchells
yearning to be turned into cash. We are also looking
for good used 35mm Arri's & other fine cameras. We
find buyers for surplus equipment. Contact Jeff at
(818) 766-3715. CENTURY PRECISION OPTICS,
10713 Burbank Blvd., No. Hollywood, CA 91601.

SERVICES AVAILABLE

QUALITY CAMERA SERVICE: Complete repair &
machine shop, parts department & top experienced
technicians are available at Birns & Sawyer, Inc., to
service your camera, lenses, tripods, & related equip-
ment. Send in your equipment for an estimate to our
Service Dept. Call (213) 466-8211, Peter Anway,
BIRNS & SAWYER, INC., 1026 N. Highland Ave.,
Hollywood, CA 90038.

WANTED: Professional motion picture equipment,
16mm & 35mm, cameras, lenses, lights, sound,
editing, projection, lab, for outright purchase or con-
signment. Supply complete technical description &
price for immediate reply. Ted Lane, ALAN GORDON
ENTERPRISES, INC., 1430 N. Cahuenga, Holly-
wood, CA 90028, (213) 466-3561.

WANTED

**ATTENTION CINEMATOGRAPHERS! STOCK
FOOTAGE WANTED.** All subjects 16 & 35mm. Turn
extra footage into dollars. We represent you. Call
Paula (213) 399-9151.

**WE NEED good, used FILM & VIDEO EQUIP-
MENT,** 16/35mm cameras, animation, optical
printers, lab equipment, VTRs, VTEs, color video
cameras, TBCs, etc. Call, or write Don Stults,
PIONEER TECHNOLOGY CORP., 1021 N. Lake St.,
Burbank, CA 91502. (818) 842-7165.

WANTED: Mitchell 35mm high speed cameras &
camera parts, for models GC, GCS, D, TA, etc.
Contact FRIES ENGINEERING INC., 12032 Vose St.,
No. Hollywood, CA 91605. Telephone (818)
765-3600.

**BIRNS & SAWYER, INC. WILL BUY YOUR EQUIP-
MENT OR SELL IT ON CONSIGNMENT. 35 YEARS
OF DEPENDABLE SERVICE TO INDUSTRY PROFES-
SIONALS. YOU CAN BANK ON US YEAR IN—AND
YEAR OUT. COME IN OR CALL MATT BARR FOR A
QUOTE. BIRNS & SAWYER, INC., 1026 N. HIGH-
LAND, HOLLYWOOD, CA 90038. (213) 466-8211.**

WANTED: 35mm wooden hand-crank motion picture
cameras. Also pre-cinema toys, i.e. Zoetrope, Prax-
inoscope & other sequential devices. Send complete
description, asking price & photo to: ALAN GORDON
ENTERPRISES, INC., 1430 Cahuenga Blvd., Holly-
wood, CA 90028. (213) 466-3561.

WANTED: ELEMACK SPYDERS, for trade-in
towards purchase of latest model Elemack Cricket
Dolly. Spyders are no longer manufactured. Parts will
soon be difficult to obtain. **ALAN GORDON EN-
TERPRISES** is the factory importer & authorized
distributor of Elemack products. Contact Ted Lane,
**ALAN GORDON ENTERPRISES, Inc., 1430
Cahuenga Blvd., Hollywood, CA 90028. (213)
466-3561.**

BELL & HOWELL FILMO 70 16mm CAMERAS with
or without lenses. Looking for late models, brown in
color with "DR" or "HR" on nameplate. (Will con-
sider "DL" or "H") Also looking for accessories: C
mt., lenses, viewfinder objectives, 110ac or 24vdc
motors. Will pay cash. Send well-packed & insured
for our inspection & offer to ALAN GORDON EN-
TERPRISES, INC., Attn: Ted Lane, 1430 Cahuenga
Blvd., Hollywood, CA 90078. (213) 466-3561.

SITUATIONS AVAILABLE

WANTED: Camera Prep technician, immediate open-
ing for qualified individual. Duties involve setting up
camera packages prior to being rented, and light
maintenance work. Must be familiar with the current
Arriflex line. Salary commensurate with experience.
Send resumes to: OTTO NEMENZ INT., INC., 870
N. Vine St., Hollywood, CA 90038.

SITUATIONS AVAILABLE

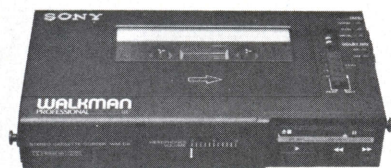
WANTED: SERVICE TECHNICIANS: Two positions open. Optical technician & Arriflex technician. Minimum experience, 5 years. **OPTICAL TECHNICIAN:** Must be familiar with assembly & dis-assembly of most lenses such as Angenieux, Cooke, Super Baltar, Zeiss Schneider, etc. Must be familiar with optical collimation & be able to set up lathe & milling machines to manufacture lens mounts, adapters, supports, etc. **ARRIFLEX TECHNICIAN:** Must be familiar with all models of Arriflex 16 & 35mm cameras, including BL III's. Mechanical, optical & electronic knowledge is essential. Both openings in our Rental Department. Good working conditions plus benefits. No phone calls please. Professional employment agencies do not inquire. Send resume with work experience & salary requirements to **ALAN GORDON ENTERPRISES, INC.**, P.O. Box 315, 1430 Cahuenga Blvd., Hollywood, CA 90078.

TELEVISION LIGHTING DIRECTOR: One of the nation's leading television production centers seeks qualified TV lighting director. Studio & location experience necessary. Opportunity to design and direct lighting as part of creative team for entertainment programs, music videos, concerts & commercials shot on film & video tape. Secure future with tremendous growth potential for right candidate. Send resume & sample reel to: **SCENE THREE, INC.**, 1813 8th Avenue So., Nashville, TN 37203, Attn: Donna Kershaw, or call (615) 385-2820.

MISCELLANEOUS

PRODUCE FOR PROFIT, generous rights on new original scripts for video & film. Mystery, comedy, horror, space/sci-fi, adventure, romance, detective, 10-minutes to full length movies, \$35 to \$85. Send \$5 for new catalog (refundable with order) and receive a free video festival script. **SCRIPTAMERICA CATALOG**, 415 Wisconsin, Whitefish, MT 59937.

OUT OF PRINT back issues of American Cinematographer. Send \$2 for catalog, 6833 N. Haight Ave., Portland, OR 97217.



X-tal Dolby 1.5 pounds From \$580.00
Conversions by THE FILM GROUP

SENNHEISER	ELMO
AKG	A-T MICS
SONY	MILLER
UHER	NIZO
JVC	SANKYO
LOWEL-LIGHT	SPECTRA
BOLEX	GOKO
BEAULIEU	Bogen ORYTEC

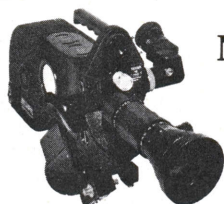
TFG PRODUCTS

JACARPENTER (CINE)

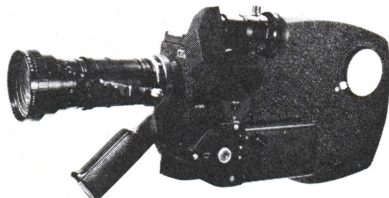
P.O. BOX 1321
MEADVILLE, PA 16335—0821

eclair

SALES, SERVICE & REPAIRS



NPR



ACL

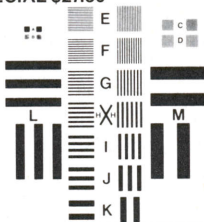
ecam

Company
1430 N. Cahuenga Blvd.
Hollywood, CA 90028
Telephone: (213) 466-7301

NEW FOCUS AND TEST CHART KIT FROM "THE LENS EXPERTS"

INTRODUCTORY SPECIAL \$27.50

Complete Focus & Test Chart Kit. Includes 25" x 38" Focus & Test Wall Chart; 8 1/2" x 11" Laminated 2-Sided Field Chart; 8 Resolution Patterns; and Instructions & Tables for calculation of resolution. (Regularly priced at \$37.50). Charts also available as spares.



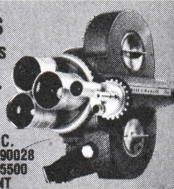
Century precision optics

10713 Burbank Blvd., North Hollywood, CA 91601
(818) 766-3715 Telex: 66-2419

B&H FILMO 70 SERIES Professional 16mm Cameras

Sales • Service • Repair

An exclusive product of
ALAN GORDON ENTERPRISES, INC.
1430 N. Cahuenga Blvd., Hollywood, CA 90028
Telephone: (213) 466-3561 • (213) 985-5500
TWX: 910-321-4526 • Cable: GORDENT



MAGIC SLIPPERS

The unique way to control film reels of different sizes. One slipper per film reel is all that is required.

35MM—16MM—SUPER 8

KB SYSTEMS
10407 62nd Place West
Everett, Washington 98204
SET OF SIX \$59.95 (206) 355-8740

SUPER 8 SOUND NIZO 6080

Trade in your Super 8 Camera for up to \$400 Off a New 6080



- Schneider optics
- Microprocessor features • German precision craftsmanship make Nizo the only choice for Super 8 professionals.

Super 8 Sound™

"The Source for Super 8 Filmmaking"

95 Harvey Street • Cambridge, MA 02140
(617) 876-5876



T-Shirts for Filmmakers

Twenty-one popular professional film equipment designs. Write for free brochure.

alan gordon enterprises inc.

Dept. TS

1430 N. Cahuenga Blvd. Hollywood, CA 90028

Telephone: (213) 466-3561 • (213) 985-5500

ENERGY PRODUCTIONS' TIME-LAPSE LIBRARY



The only one of its kind in the world. An invaluable resource, all shot in 35mm, with over 300,000 feet of beautiful and exciting production ready images: aerals, clouds, storms, lighting, waterfalls, flowers, suns, moons, traffic, landscapes and current footage of American cities. Time lapse to high speed, macro to micro.

We Have Captured the Fantastic

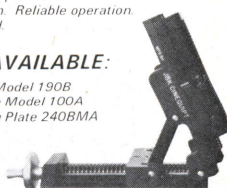
Energy Productions 846 N. Cahuenga Blvd., Hollywood, CA 90038 **213-462-3310**

THE NEW JBK TILT PLATE MODEL 280M GEARED ACTION 90° TILT

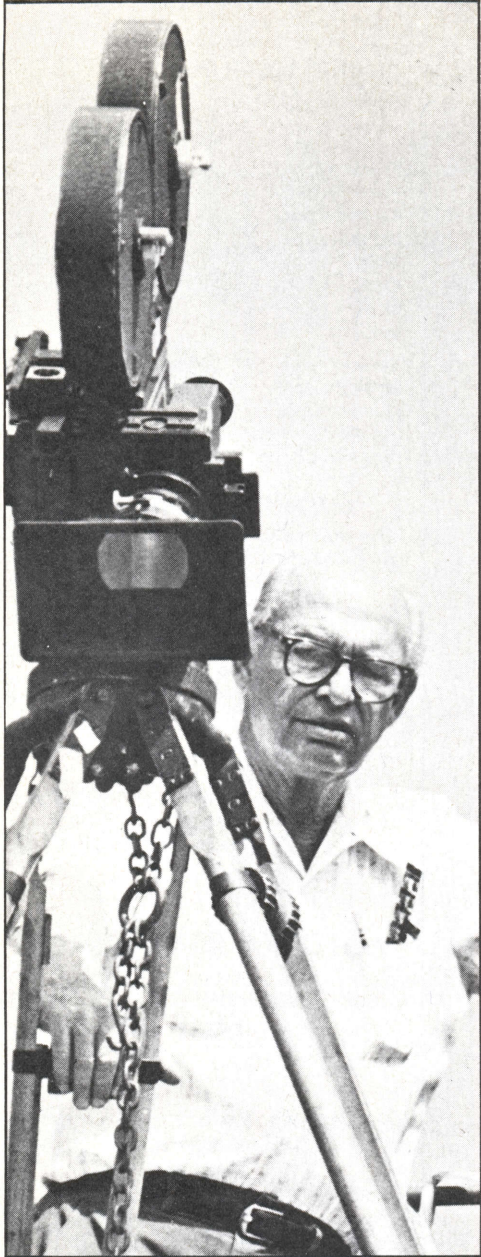
- Accommodates all video, 16mm, and 35mm cameras up to 80 lbs.
- Camera mounting plate slides in a dovetail.
- Low profile design. Reliable operation.
- Moderately priced.

ALSO AVAILABLE:

- Sliding Tilt Plate Model 190B
- Sliding Base Plate Model 100A
- Camera Mounting Plate 240BMA



Tel. (818) 994-1937 (24 hr.)
5648 Vineland Ave. N. Hollywood, CA 91601
or call RNI Production Center (213) 877-3041



This man:

- Landed a flying saucer in the heart of Washington, D.C.
- Made Paul Newman and Robert Redford leap 80 feet into a rocky creek
- Destroyed the world's tallest building.
- Sent Raquel Welch on an odyssey through a man's bloodstream
- Fed James Mason to a giant lizard.
- Sliced his boss's son to ribbons with laser beams
- Turned a luxury liner upside down
- Put Rex Harrison aboard a giant moth on its way to the moon

***He's L.B. Abbott, ASC,**
and he tells how and why he did
these things in his new book . . .*

SPECIAL EFFECTS

Wire, Tape and Rubber Band Style

NEW FROM →

Hundreds of color
photos, 242 pages,
cloth bound

\$29.95



Add \$2.50 postage and
handling per copy USA:
\$5 per copy foreign.
Calif. residents add
\$1.95 state tax.

The ASC Press, P.O. Box 2230,
Hollywood, CA 90078

Please send _____ copies Special Effects—Wire, Tape
and Rubber Band Style

Name _____

Address _____

City _____

State _____

Zip _____

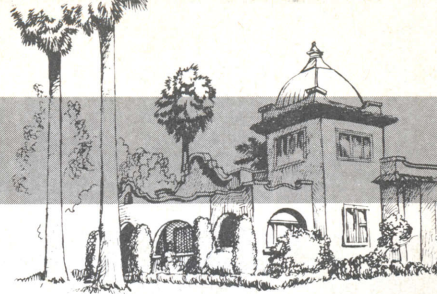
☐ Payment enclosed ☐ Charge by Visa ☐ Mastercard

Card # _____ Exp. Date _____

Signed _____

Allow 6–8 weeks for delivery U.S. funds only.

From the Clubhouse



American Society of Cinematographers

The American Society of Cinematographers is not a labor union or a guild, but is an educational, cultural and professional organization. Membership is by invitation to those who are actively engaged as Directors of Photography and have demonstrated outstanding ability. Not all cinematographers can place the initials ASC after their names. ASC membership has become one of the highest honors that can be bestowed upon a professional cinematographer, a mark of prestige and distinction.

Officers

Stanley Cortez
President
Leonard South
1st Vice President
Harry Wolf
2nd Vice President
Ted Voigtlander
3rd Vice President
Joseph Westheimer
Treasurer
Alfred Keller
Secretary
Henry Freulich
Sergeant-At-Arms

Members of the Board

L.B. Abbott
Joseph Biroc
Stanley Cortez
Linwood G. Dunn
Daniel Fapp
George Folsey
William A. Fraker
Henry Freulich
Milton Krasner
Philip Lathrop
Gene Polito
Lester Shorr
Leonard South
Ted Voigtlander
Harry Wolf

Alternates

Howard Anderson, Jr.
Charles Wheeler
Vilmos Zsigmond
John Alonzo
Alfred Keller
Joseph Westheimer

Executive Director

Alfred Keller

Museum Curator

Kemp Niver

A.S.C. room No. 1 at the Motion Picture and Television Country Home is an accomplished fact, made so by a \$50,000 contribution from 61 individual members and the Society itself before the end of December, 1984.

The room is a part of a \$50 million expansion plan at the home, to enlarge and improve its present facilities. A.S.C. membership is now launched upon the financing of Room No. 2. Contributions should be made through the Motion Picture & Television fund committee of the A.S.C., of which Al Keller is chairman.

The two rooms are adjacent to each other in the master plan of enlargement now underway at the Country Home and will bear plaques indicating they are gifts of the A.S.C.

American Society of Cinematographers was host to an autograph party in February, held at the clubhouse in conjunction with the A.S.C. Press, which is the book publishing arm of the holding company.

The authors of "The Light on Her Face," Joseph and Juanita Walker of Las Vegas; L.B. "Bill" Abbott, author of "Special Effects—Wire, Tape and Rubber Band Style," and many of the contributing authors of "The ASC Treasury of Visual Effects" were present to autograph books for more than 500 attending fans. "Treasury" authors present were Joseph Westheimer, Howard Anderson, Jr., Albert Whitlock, Enzo Martinelli, Linwood Dunn, George E. Turner and Richard Patterson.

Refreshments were served, books were sold, and guests met with various members of the Board of Governors as they toured the Clubhouse museum and other facilities.

New associate members elected to the Society are Ken Kishimoto of Fuji Photo Film Co., Ltd., and Carlos De Mattos of Matthews Studio Equipment, Inc.



De Mattos is chief financial officer of Matthews and was recipient of an Academy Award for Scientific or Technical achievement in 1983 for the design and manufacture of the Tulip crane.

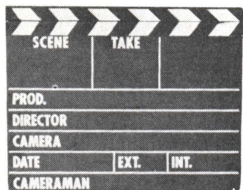
Kishimoto is assistant to the president of Fuji, U.S.A. and is also technical representative for the motion picture products division. He has contributed to the development of several Fuji emulsions.

The Clubhouse was visited recently by a delegation of leaders of the fast-growing Korean motion picture industry. Heading the group were Hwang Young Bin, president of the Motion Picture Association of Korea; Suk Kee Lee, president of the Korean Society of Cinematographers; and Lyou Jae-Hyoung, director of the Special Effect Photography Unit of the Motion Picture Promotion Corp. of Korea. The Korean group is planning to set up a cultural exchange program with film industry organizations in the United States.

From left standing:
A.S.C. President Stanley Cortez, Linwood G. Dunn, L.B. Abbott. Seated:
Juanita and Joseph Walker. All were in attendance at the ASC Press autograph party in February.

SCENE SLATES

Alan Gordon offers a wide variety of professional scene slates tailor-made to every production. Slates, large or small, black or white, MOS or sound ... we've got 'em all!



A.G.E. ECONOMY SCENE SLATE — The standard of the Industry! White on black, 12 1/4" x 9 3/4".

Other models available:

AGE THIRTY SLATE — 12 1/2" x 9 1/4", white or yellow on black,

HOLLYWOOD CLAPPER — white on black, 7 7/8" x 7".

COMBO SLATE — black on white, 12" x 9 1/4", white acrylic with pine clapper.

LARGE VELCRO SLATE — white on black, 12" x 11", with velcro numbers for marking.

INSERT SLATE — black on white, 5" x 4", acrylic

SMALL VELCRO SLATE — white on black, 12" x 8 3/4", with velcro numbers for marking

NOVELTY SLATES — Mirror, Clock, or Mirror Clock slate, 11 3/4" x 10 1/4". Invitation Slate — 5" x 4 1/2", white on black. Think Big Slate — 22" x 15", white on black.

Call or write today for more information.

MOST PRO'S DO!

ALAN GORDON ENTERPRISES INC.

1430 Cahuenga Blvd., Hollywood, CA 90028

Address Correspondence to: P.O. Box 315, Hollywood, CA 90078

Telephone: (213) 466-3561 • (818) 985-5500

TWX: 910-321-4526 • Cable: GORDENT

WIDE EYE I & II

Low-cost, lightweight,
wide-angle lens
attachments for your
ENG/EFP video zoom lenses.



- Front-mounted *Wide Eye I & II* readily convert most video zoom lenses into *ultra wide-angle* fixed focal-length lenses with no loss in light transmittance.
- Made of high-quality **optical glass** with multiple anti-reflective coatings.
- *Wide Eye I* increases the widest angle of the zoom lens by about 35% with minimal distortion. *Wide Eye II* increases it by about 50% for a "fish eye" effect.
- Easily attached to most professional ENG/EFP zoom lenses which feature macro and/or adjustable back-focus.
- Ruggedly constructed. Supplied with Naugahyde pouches featuring Velcro closure and belt loops.



Rental • Sales • Service



Film/Video
Equipment
Service Co.

In Memoriam

Harry F. Perry, ASC, a veteran cinematographer most noted for his unsurpassed aerial work in *Wings* and *Hell's Angels*, died at the Motion Picture Hospital at Woodland Hills February 9.

Born at Idana, Kansas, on May 2, 1888, Perry worked for the Denver and Rio Grande Railroad for seven years, then moved to San Diego to work for the Hercules Powder Co. His older brother, Paul, who was a first cameraman at Famous Players-Lasky (later Paramount) got him a job as an assistant cameraman. He assisted Alvin Wyckoff and others until 1921, when actor-director Tom Forman had him promoted to first cameraman. Among the Famous Players productions photographed by Perry were seven dramas starring Thomas Meighan: *Cappy Ricks*, *The Conquest of Canaan*, *A Prince There Was*, *City of Silent Men*, *The Easy Road*, *The Faith Healer* and *White and Unmarried*.

Forman and Perry then made a series of pictures for Benjamin J. Hampton's Preferred Pictures in 1922 and '23, including *Shadows* with Lon Chaney, *The Girl Who Came Back* with Miriam Cooper and Kenneth Harlan; the first version of the Western classic, *The Virginian* with Harlan and Florence Vidor, and *The Broken Wing* with Harlan and Cooper. Perry did his first aerial work in *The Broken Wing*, mounting his camera on a wooden saddle strapped behind the rear cockpit of a two-seat "Jenny" biplane. To show Harlan apparently piloting a two-seater he created an outboard, remote controlled camera run by a Singer Sewing Machine motor which could be switched on and off from the other cockpit by the real pilot.

Perry's most famous silent film is *Wings*, Paramount's \$2,000,000 production of aerial warfare in World War I, of which he was



chief cinematographer. (See page 34).

Howard Hughes screened *Wings* over and over while preparing his own air epic, *Hell's Angels*. When production commenced, Hughes hired Perry as chief aerial cinematographer while Gaetano Gaudio, ASC, was in charge of the scenes on the ground and E. Roy Davidson, ASC, took charge of the extensive miniature work. Perry started work in October 1927 and worked non-stop until May 1929, returning in October for another six weeks' shooting. Hughes spent an unprecedented \$4,000,000 making *Hell's Angels*, which remained the most expensive American film for many years. Three members of the aerial crew were killed in crashes. E. Burton Steene, ASC, and Elmer G. Dyer, ASC, were Perry's principal cameramen.

Perry later worked as photographic supervisor of the Camera Division of the U.S. Air Force. He photographed the aerial shots of the underwater atomic blast at Bikini in 1946 and more than two dozen other nuclear bomb tests. He retired from the 1352nd Air Force Squadron in 1957.

Perry had been a member of the ASC since 1922. He is survived by his wife, Fern, and three sons, Harry, Tom and John.

MOTION CONTROL

- 15 years of field experience
- U.S. and Foreign Patents
- Academy Technical Achievement Award
- Over 200 systems installed worldwide
- Developed with in-house production facilities

Multi-axis Motion Control for:
 Animation Stands
 Slide Stands
 Optical Printers
 Horizontal Shooters
 Stop Motion Camera Drives
 Fade/Dissolve Controllers
 Optical Printer Drives
 Follow Focus Systems for:
 Animation Stands
 Slide Stands
 Optical Printers
 Horizontal Shooters

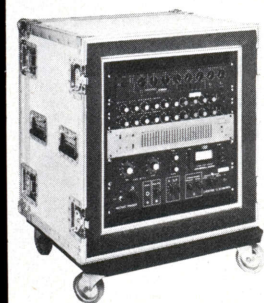
CINETRON is the largest manufacturer of computerized motion control systems for the motion picture industry.

cinetron

CINETRON COMPUTER SYSTEMS, INC.
 6700 I-85 North, Bldg. 1-B
 Norcross, GA 30093
 (404) 448-9463

VIDEO CASES BY EXCALIBUR

STANDARD SIZES
FOR YOUR EQUIPMENT
ALL MODELS



VCR
INTERCOM
CAMERA
MONITOR
MICROPHONE
LIGHTING
CABLE
STANDS
UTILITY
MORE!

Write or call today for info and prices.

EXCALIBUR INDUSTRIES

12427 Foothill Blvd., Lake View Terrace, CA 91342

818/899-2547

Advertiser Index

A

Aaton: 76
 Agfa-Gevaert: 71
 Alan Gordon:
 13, 88, 90,
 133, 143, 139
 American Cinematographer:
 4, 32, 130,
 132, 140
 Arriflex: 73, 81

B

Band Pro Film/
 Video: 129
 Barbizon: 133
 Bardwell &
 McAlister:
 137
 Batib: 134
 Bellevue Pathe:
 137
 Berc: 97
 Birns & Sawyer:
 25, 90
 Boston Camera:
 136
 Brooks Institute:
 110

C

Camera Mart: 31
 Camera Service
 Center: 6
 Carpenter: 139
 Century Precision:
 109, 139
 Chambless: 136
 Churchill: 9
 Cine Pro: C-2
 Cine Sound 5:
 136
 Cine Video: 42
 Cinematography
 Electronics: 16
 Cinequipt: 139
 Cinetron: 143
 Clairmont: 10,
 56
 Colt Helicopter:
 24
 Columbia College: 30

D

David Stipes: 24
 Deluxe: 33
 Desmar Corp.:
 47
 Du Art: 49
 Victor Duncan:
 53

E

Eastman Kodak:
 5
 Egriment: 23,
 16, 117
 Elemack: 7
 Elicon: 102
 Energy Prods.:
 139
 Excalibur: 88
 Expanded Entertainment:
 134

F

Fad Times: 93
 Fax Co.: 110
 Film Group: 83
 Film Video: 142
 Fries: 109

G

G & M Power:
 113
 Adolph Gasser:
 22
 General Camera:
 1
 Great American
 Market: 14

H

Haflexx: 138
 Hardy Jones:
 138
 Harrison: 125
 Heitz: 12
 Helix: 74
 Hi Quality: 83

I

Ikegami: 20, 29
 Image Devices:
 18
 International
 Film Work-
 shops: 113
 Interformat: 18

J

J & R Film: 92
 Jack McKenney:
 17
 JBK Cinequipt:
 139
 JK Camera: 28

K

K B Systems: 38
 K & H Products:
 91
 Jordan Klein: 97
 David Knox: 8

L

Larry Edmunds:
 138
 Laumic: 81
 Lee Filters: 19,
 82
 Lee Lighting:
 114
 Light-Wave Systems:
 117
 Peter Lisand:
 125
 London Film
 School: 83
 Lowel Light: 2
 LTM Corp.: 98
 L.A. Video
 Show: 87

M

MacGillivray-
 Freeman: 135
 Massachusetts:
 32
 Daniel Merkel:
 138
 Miller Professional:
 131
 Mole-Richardson:
 95

N

Nady Systems:
 120
 National Geographic:
 118
 NCE of Florida:
 136, 137
 New Mexico:
 132
 Newsfilm: 137

O

Ocean Images:
 131

P

Palmer Films:
 120

R

Rafik: 136, 137
 Richter Cine:
 133
 Rosco Lab: 89
 Ross-Gaffney:
 137
 Rycote: 131

S

Sennheiser: 8
 Siemens: 102
 SMS Prods: 137
 Sony: 26
 Spectrum Film:
 138
 Steenbeck: C-3
 Stereovision: 137
 Stevens Eng.:
 137
 Strand Century:
 15
 Studio Film &
 Tape: 135
 Super 8 Sound:
 139

T

Tahoe Work-
 shops: 81
 Technicolor: 75
 Technological:
 91
 Richard
 Tiedemann:
 30
 Tiffen: 28

U

Universal Fluid
 Head: 129

V

Videosmith: 91

W

Weaver/Steadman:
 131
 West Coast Audio:
 127
 Whitehouse: 135
 Alan Williams:
 137

Y

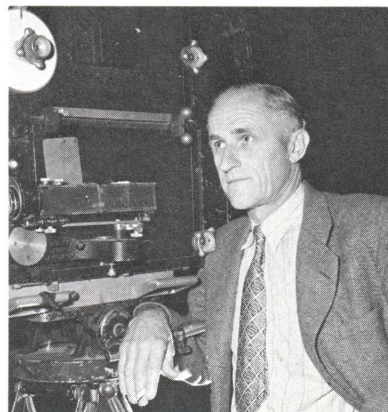
Yale Lab: 137

Z

Zellan: C-4

Personal Favorite

Some of the most interesting photography in any of the pictures we made at Warner Bros. was for *Dark Passage* in 1947. This was a mystery story in which Humphrey Bogart escapes from San Quentin, has his face remade by plastic surgery, and solves the murder for which he was framed. The first half hour is shown from Bogart's point of view, and as special effects photographer I had him roll down a hill in a barrel, cross the Golden Gate Bridge, fight with a guy, romance Lauren Bacall, etc. Delmar Daves, the director, was very smart and a nice guy to work with. The director of photography, Sid Hickox, ASC, did excellent work. The picture had suspense, atmosphere, and Bogart and Bacall.

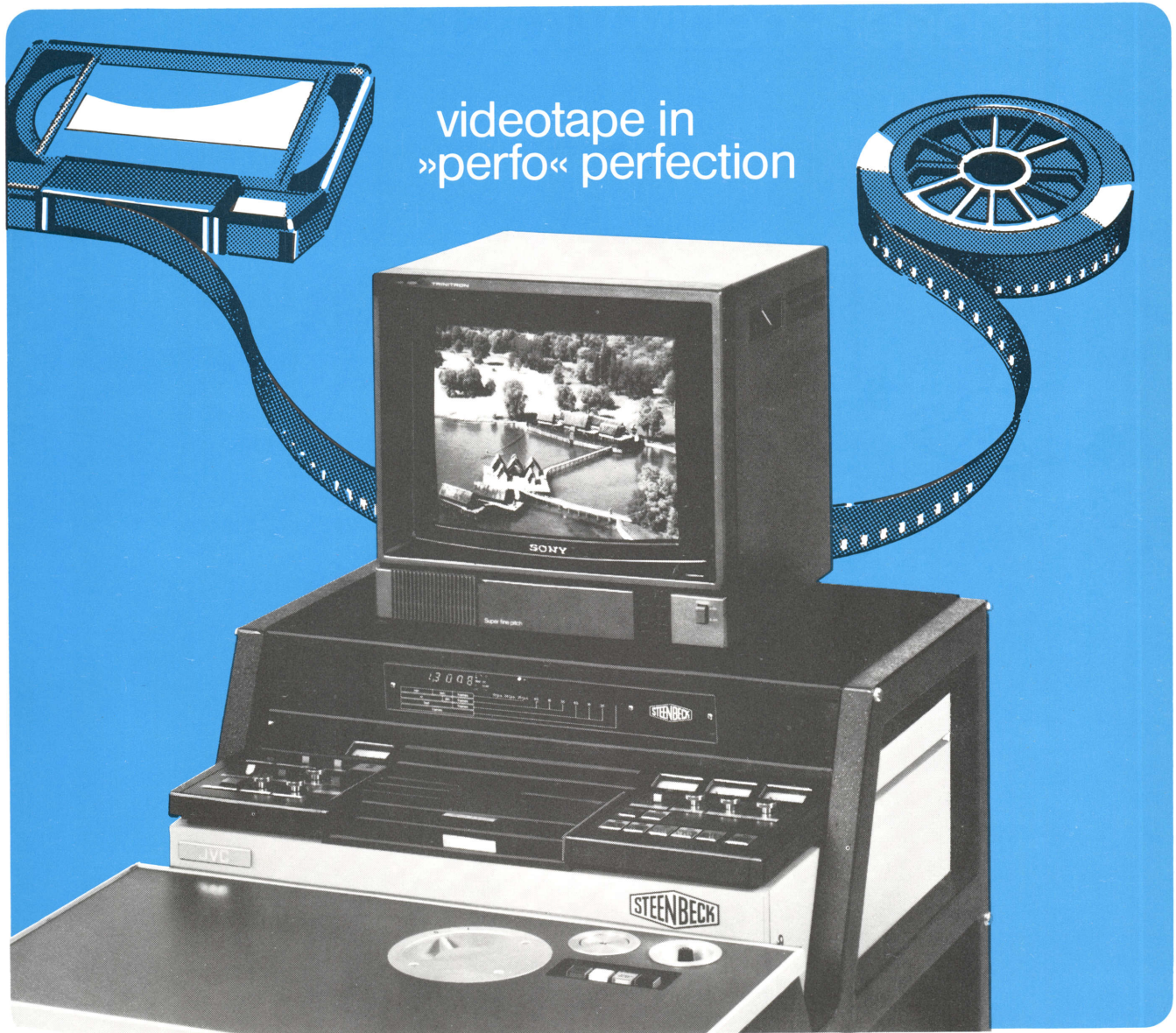


Hans F. Koenekamp, ASC, is one of the real masters of special photographic effects. Director-cinematographer Byron Haskin called him "the greatest effects man of them all." His work encompasses the epic *Civilization*, made in 1916 at Inceville, the pre-war Mack Sennett comedies including *Mickey* (1918), with Mabel Normand, and innumerable Warner Bros.-First National pictures. He pioneered background projection and other composite systems. His pictures include *Noah's Ark*, *Moby Dick*, *Svengali*, *Air Force* and *The Beast With Five Fingers*. His son is the distinguished cinematographer, Fred Koenekamp, ASC.



ST201V Video-Reporter

Video-sound post production -
the easy way...



videotape in
»perfo« perfection

The new Steenbeck technique
offers the convincing solution in video-sound post production.

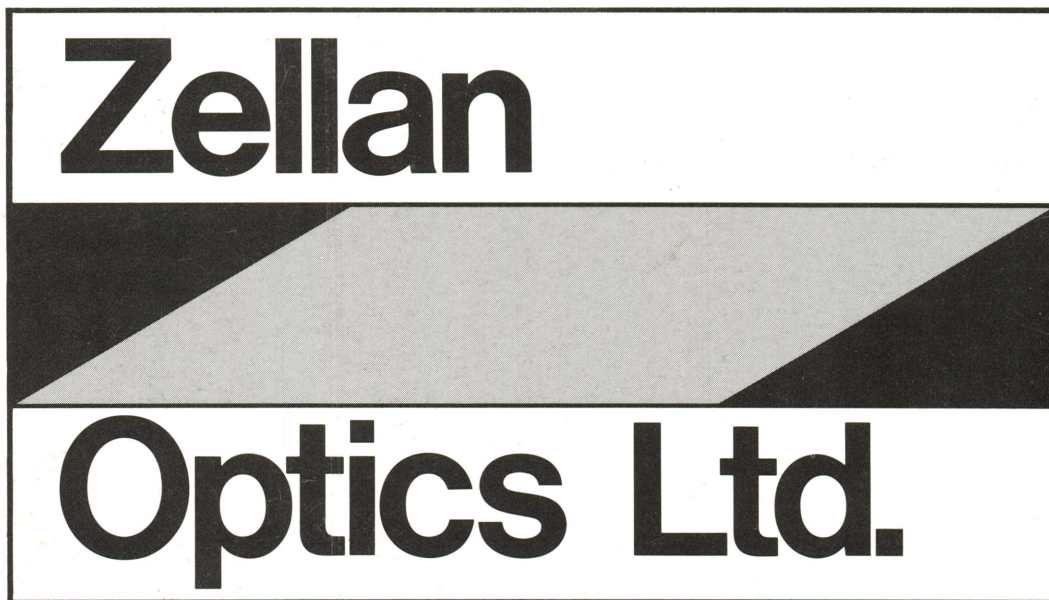
- Easy to operate
- Precise-timecode independent
- Multiple interfaces guarantee economical use
- Adaptable to existing studio equipment

Please apply for detailed information!



STEENBECK INC. □ 9554 Vassar Avenue □ Chatsworth, California 91311 □ (818) 998-4033

INTRODUCING...



A new company that distributes and services quality products.

Portamount camera mounts

Camrail track systems

Optiflex viewing cables

Aaton cameras and time code systems

Cooke optics

CamClip quick change accessories

Visual Departures lighting accessories

Kingsway matte boxes

And products from Angenieux, Tiffen, Sachtler and other manufacturers.

Guy Genin, internationally known for his expertise with Aaton cameras and time code systems, heads the Zellan Optics service staff.

Zellan Optics Ltd. 15 West 26th Street • New York, NY 10010 • 212/213-0620
Contact: Les Zellan

Zellan Optics Ltd. 905 N. Cole Avenue • Hollywood, CA 90038 • 213/463-8151
Contact: Marcia Hinds